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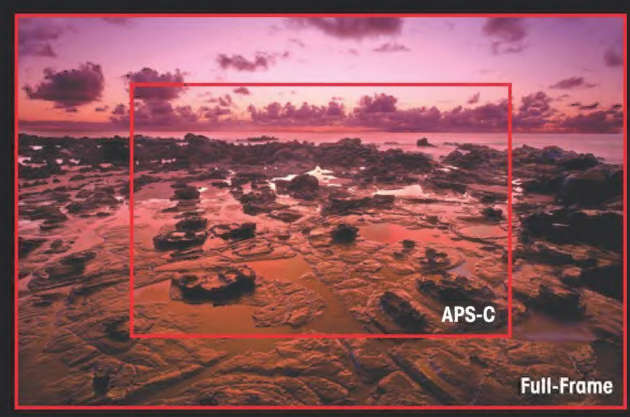

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Through the ages she's been portrayed as saint, harlot, apostle and, in the *Da Vinci Code* book and movie, the mother of Jesus' child. Which is the truth?

BY JAMES CARROLL

THIS PAGE: Even after the barn where he was hiding was set ablaze, John Wilkes Booth refused to lay down his arms. Illustration from the Granger Collection, New York.

COVER: In the Grand Canyon, the Shamans' Gallery, a painted, 60-foot sandstone wall that one archaeologist dates to before 1000 B.C., is thought to have been a sacred site. Photograph by Bill Hatcher.

"Booth moved to the center of the barn, swiveled his head in every direction, measuring how quickly the flames were engulfing him." —"AN ASSASSIN'S FINAL HOURS," PAGE 66

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"Tai Shan, the Zoo's first surviving panda cub, is one of the capital's biggest celebrities. In December, when the cub made his public debut, 13,000 tickets to see him were snapped up on-line in two hours." —**"LEARNING FROM TAI SHAN,"** PAGE 76

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THIS PAGE: Giant panda cub Tai Shan (which means "peaceful mountain") was born July 9, 2005, the size of a stick of butter. Today he weighs a robust 50 pounds. Photograph by Jessie Cohen / National Zoological Park, SI.

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FROM THE EDITOR

Ruins and Secrets

Probing the Grand Canyon's mysterious prehistory **BY CAREY WINFREY**

YOU MAY NOTICE some reorganization and some new design elements in this issue. It's not a redesign; we like our classic look. But Brian Noyes, our art director, has freshened up the magazine typographically to make it easier to read and, we like to think, more inviting.

One new editorial offering is "Interview," a question-and-answer session with an expert who has recently discovered, achieved or created something of note in our areas of interest, especially the sciences, the arts and (in the broadest possible terms) history. In this issue, Senior Editor Laura Helmuth talks to Neil Shubin of the University of Chicago, who recently discovered a transition fossil that links fish and land-dwelling animals. We have a few other new editorial ideas in the works as well.

You'll also find a new magazine-within-a-magazine, "Around the Mall," now home to "The Object at Hand" and the Secretary's letter as well as an added page of Institution happenings. We think you'll find it interesting even if you're not headed for Washington, D.C. in the near future.

And those of you who received your magazine in the mail may have noticed that it was not wrapped in the usual white paper. We're going to try to do without the wrapper and thus save nearly 50 million pieces of paper a year—over time, a lot of trees.

DAVID ROBERTS, who wrote our article about the earliest denizens of the Grand Canyon ("Below the Rim," p. 54), first visited that extraordinary chasm when he was about 8 years old. He didn't really get it. "I think the scale of it is too huge," he says. So photographer Bill Hatcher had to talk him into joining an exploration, for SMITHSONIAN, of its prehistoric trails—a part of the Grand Canyon that few ever see. This time he got it. "One of the things that's really surprising to me," says Roberts, "is that this is a place with over four million tourists a year, but the archaeology is still just barely getting sorted out. It's sort of amazing that one of the iconic national places to visit has such a mysterious prehistory."

BILL HATCHER

Roberts: "Lore that none of us white boys had any right to know about."

One of the duo's first stops was a Havasupai Indian village on the canyon floor. "We immediately went to the tribal chairman, Rex Tilousi, and explained who we were. And you know what finally got to him? It was the name SMITHSONIAN—he knew that SMITHSONIAN was an important magazine. At one point he said that if it had been another magazine, he would have told us to get lost. So he slowly warmed to us, and we got to have the experience of going to the ruins and the secret places, which was just wonderful. But even then, he said there was plenty of stuff he wasn't going to tell us. There was plenty of ancient lore that none of us white boys had any right to know about."

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How are your sleeping habits? There are many changes you can make in your lifestyle to improve your sleep. To find out more go to www.lunesta.com

Important Safety Information: Be sure you have at least eight hours to devote to sleep before becoming active. Until you know how you'll react to Lunesta, you should not drive or operate machinery. Do not use alcohol while taking Lunesta. Most sleep medicines carry some risk of dependency. Side effects may include unpleasant taste, headache, drowsiness and dizziness.

See important patient information on the next page.

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1, 2 AND 3 MG TABLETS

Please read this summary of information about LUNESTA before you talk to your doctor or start using LUNESTA. It is not meant to take the place of your doctor's instructions. If you have any questions about LUNESTA tablets, be sure to ask your doctor or pharmacist.

LUNESTA is used to treat different types of sleep problems, such as difficulty in falling asleep, difficulty in maintaining sleep during the night, and waking up too early in the morning. Most people with insomnia have more than one of these problems. You should take LUNESTA immediately before going to bed because of the risk of falling.

LUNESTA belongs to a group of medicines known as "hypnotics" or, simply, sleep medicines. There are many different sleep medicines available to help people sleep better. Insomnia is often transient and intermittent. It usually requires treatment for only a short time, usually 7 to 10 days up to 2 weeks. If your insomnia does not improve after 7 to 10 days of treatment, see your doctor, because it may be a sign of an underlying condition. Some people have chronic sleep problems that may require more prolonged use of sleep medicine. However, you should not use these medicines for long periods without talking with your doctor about the risks and benefits of prolonged use.

Side Effects

All medicines have side effects. The most common side effects of sleep medicines are:

- Drowsiness
- Dizziness
- Lightheadedness
- Difficulty with coordination

Sleep medicines can make you sleepy during the day. How drowsy you feel depends upon how your body reacts to the medicine, which sleep medicine you are taking, and how large a dose your doctor has prescribed. Daytime drowsiness is best avoided by taking the lowest dose possible that will still help you sleep at night. Your doctor will work with you to find the dose of LUNESTA that is best for you. Some people taking LUNESTA have reported next-day sleepiness.

To manage these side effects while you are taking this medicine:

- When you first start taking LUNESTA or any other sleep medicine, until you know whether the medicine will still have some effect on you the next day, use extreme care while doing anything that requires complete alertness, such as driving a car, operating machinery, or piloting an aircraft.
- Do not drink alcohol when you are taking LUNESTA or any sleep medicine. Alcohol can increase the side effects of LUNESTA or any other sleep medicine.
- Do not take any other medicines without asking your doctor first. This includes medicines you can buy without a prescription. Some medicines can cause drowsiness and are best avoided while taking LUNESTA.
- Always take the exact dose of LUNESTA prescribed by your doctor. Never change your dose without talking to your doctor first.

Special Concerns

There are some special problems that may occur while taking sleep medicines.

Memory Problems

Sleep medicines may cause a special type of memory loss or "amnesia." When this occurs, a person may not remember what has happened for several hours after taking the medicine. This is usually not a problem since most people fall asleep after taking the medicine. Memory loss can be a problem, however, when sleep medicines are taken while traveling, such as during an airplane flight and the person wakes up before the effect of the medicine is gone. This has been called "traveler's amnesia." Memory problems have been reported rarely by patients taking LUNESTA in clinical studies. In most cases, memory problems can be avoided if you take LUNESTA only when you are able to get a full night of sleep before you need to be active again. Be sure to talk to your doctor if you think you are having memory problems.

Tolerance

When sleep medicines are used every night for more than a few weeks, they may lose their effectiveness in helping you sleep. This is known as "tolerance." Development of tolerance to LUNESTA was not observed in a clinical study of 6 months' duration. Insomnia is often transient and intermittent, and prolonged use of sleep medicines is generally not necessary. Some people, though, have chronic sleep problems that may require more prolonged use of sleep medicine. If your sleep problems continue, consult your doctor, who will determine whether other measures are needed to overcome your sleep problems.

Dependence

Sleep medicines can cause dependence in some people, especially when these medicines are used regularly for longer than a few weeks or at high doses. Dependence is the need to continue taking a medicine because stopping it is unpleasant.

When people develop dependence, stopping the medicine suddenly may cause unpleasant symptoms (see *Withdrawal* below). They may find they have to keep taking the medicine either at the prescribed dose or at increasing doses just to avoid withdrawal symptoms.

All people taking sleep medicines have some risk of becoming dependent on the medicine. However, people who have been dependent on alcohol or other drugs in the past may have a higher chance of becoming addicted to sleep medicines. This possibility must be considered before using these medicines for more than a few weeks. If you have been addicted to alcohol or drugs in the past, it is important to tell your doctor before starting LUNESTA or any sleep medicine.

Withdrawal

Withdrawal symptoms may occur when sleep medicines are stopped suddenly after being used daily for a long time. In some cases, these symptoms can occur even if the medicine has been used for only a week or two. In mild cases, withdrawal symptoms may include unpleasant feelings. In more severe cases, abdominal and muscle cramps, vomiting, sweating, shakiness, and, rarely, seizures may occur. These more severe withdrawal symptoms are very uncommon. Although withdrawal symptoms have not been observed in the relatively limited controlled trials experience with LUNESTA, there is, nevertheless, the risk of such events in association with the use of any sleep medicine.

Another problem that may occur when sleep medicines are stopped is known as "rebound insomnia." This means that a person may have more trouble sleeping the first few nights after the medicine is stopped than before starting the medicine. If you should experience rebound insomnia, do not get discouraged. This problem usually goes away on its own after 1 or 2 nights.

If you have been taking LUNESTA or any other sleep medicine for more than 1 or 2 weeks, do not stop taking it on your own. Always follow your doctor's directions.

Changes In Behavior And Thinking

Some people using sleep medicines have experienced unusual changes in their thinking and/or behavior. These effects are not common. However, they have included:

- More outgoing or aggressive behavior than normal
- Confusion
- Strange behavior
- Agitation
- Hallucinations
- Worsening of depression
- Suicidal thoughts

How often these effects occur depends on several factors, such as a person's general health, the use of other medicines, and which sleep medicine is being used. Clinical experience with LUNESTA suggests that it is rarely associated with these behavior changes.

It is also important to realize it is rarely clear whether these behavior changes are caused by the medicine, are caused by an illness, or have occurred on their own. In fact, sleep problems that do not improve may be due to illnesses that were present before the medicine was used. If you or your family notice any changes in your behavior, or if you have any unusual or disturbing thoughts, call your doctor immediately.

Pregnancy And Breastfeeding

Sleep medicines may cause sedation or other potential effects in the unborn baby when used during the last weeks of pregnancy. Be sure to tell your doctor if you are pregnant, if you are planning to become pregnant, or if you become pregnant while taking LUNESTA.

In addition, a very small amount of LUNESTA may be present in breast milk after use of the medication. The effects of very small amounts of LUNESTA on an infant are not known; therefore, as with all other prescription sleep medicines, it is recommended that you not take LUNESTA if you are breast-feeding a baby.

Safe Use Of Sleep Medicines

To ensure the safe and effective use of LUNESTA or any other sleep medicine, you should observe the following cautions:

1. LUNESTA is a prescription medicine and should be used ONLY as directed by your doctor. Follow your doctor's instructions about how to take, when to take, and how long to take LUNESTA.
2. Never use LUNESTA or any other sleep medicine for longer than directed by your doctor.
3. If you notice any unusual and/or disturbing thoughts or behavior during treatment with LUNESTA or any other sleep medicine, contact your doctor.
4. Tell your doctor about any medicines you may be taking, including medicines you may buy without a prescription and herbal preparations. You should also tell your doctor if you drink alcohol. DO NOT use alcohol while taking LUNESTA or any other sleep medicine.
5. Do not take LUNESTA unless you are able to get 8 or more hours of sleep before you must be active again.
6. Do not increase the prescribed dose of LUNESTA or any other sleep medicine unless instructed by your doctor.
7. When you first start taking LUNESTA or any other sleep medicine, until you know whether the medicine will still have some effect on you the next day, use extreme care while doing anything that requires complete alertness, such as driving a car, operating machinery, or piloting an aircraft.
8. Be aware that you may have more sleeping problems the first night or two after stopping any sleep medicine.
9. Be sure to tell your doctor if you are pregnant, if you are planning to become pregnant, if you become pregnant, or if you are breastfeeding a baby while taking LUNESTA.
10. As with all prescription medicines, never share LUNESTA or any other sleep medicine with anyone else. Always store LUNESTA or any other sleep medicine in the original container and out of reach of children.
11. Be sure to tell your doctor if you suffer from depression.
12. LUNESTA works very quickly. You should only take LUNESTA immediately before going to bed.
13. For LUNESTA to work best, you should not take it with or immediately after a high-fat, heavy meal.
14. Some people, such as older adults (i.e., ages 65 and over) and people with liver disease, should start with the lower dose (1 mg) of LUNESTA. Your doctor may choose to start therapy at 2 mg. In general, adults under age 65 should be treated with 2 or 3 mg.
15. Each tablet is a single dose; do not crush or break the tablet.

Note: This summary provides important information about LUNESTA. If you would like more information, ask your doctor or pharmacist to let you read the Prescribing Information and then discuss it with him or her.

Rx only

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LETTERS READERS RESPOND TO THE **APRIL** ISSUE

A GIBSON GIRL IN NEW GUINEA
NEW GUINEA HEADHUNT
Smithsonian
LEAPING LEMURS!
(AND THE WOMAN WHO LOVES THEM)
Solving the Riddle of Odysseus
A Gibson Girl Among the Cannibals

Steve Bloom's beautiful and incredible cover picture of a female lemur with baby should win a prize. Fred Astaire would be jealous of that step. It reminds me of your great meerkat photograph from 20 years ago, a poster of which has been on my wall ever since.

HARRY PRESS, PALO ALTO, CALIFORNIA

UPBEAT PRIMATES

ON A DAILY BASIS, I read heartbreaking articles about gorillas, monkeys, orangutans and other apes being slaughtered and even eaten towards the precipice of extinction. So it was profoundly heart-warming to learn ("For the Love of Lemurs") that the captivating animals under the benevolent guardianship of Patricia Wright are thriving.

BRIEN COMERFORD
GLENVIEW, ILLINOIS

GIBSON GIRL REMEMBERED

IMAGINE MY SURPRISE upon seeing your story about the painting expeditions of a family friend, Caroline Mytinger ("A Gibson Girl in New Guinea"). Although I was only 11 years old at the time, I clearly remember her arrival at our Tacoma, Washington, home in 1938. Her Ford woody station wagon was packed with vivid paintings framed in bamboo of South Sea Island natives; these were unloaded and unwrapped so my father could take color photographs. My parents first met Mytinger in 1931 when we were living in Portland, Oregon; she did charcoal portraits of them that hang in my home office today. And in my library are her two books, signed by the author.

GEORGE W. HOUK
DAYTON, OHIO

WHILE READERS MAY cringe at artist Caroline Mytinger's use of the word "pickaninnies" in her books written in

the 1930s, they should also know that "pikinini" is the Neo-Melanesian or pidgin term for child, baby, son or daughter. That is the term used today by inhabitants of both New Guinea and the Solomon Islands.

MARY COWMEADOW
PLYMOUTH, MICHIGAN

GRAVE SECRETS

THROUGHOUT Adam Goodheart's article about the remains of John Paul Jones ("Home Is the Sailor"), I wondered why not just do DNA analysis. Then it dawned on me: it would be sacrilegious to do so. This is John Paul Jones. He's not some Native American, whose descendants have to go to federal court to fight for the rest their ancestor deserves. No, he is a respected American whose remains are afforded peace and dignity.

RONALD P. MALDONADO
WINDOW ROCK, ARIZONA

UNDERSTANDABLY, the superintendent of the Naval Academy and the highest levels of the Navy would be expected to have feelings of reverence for John Paul Jones, making them unwilling to disturb his venerated remains as alluded to in a hypothetical opening of the Jones' sarcophagus to positively identify him by DNA testing. But when there is enough doubt and we have the means to provide an answer, should not feelings for the truth prevail? Would it not be sacrilege to pay tribute to someone other than John Paul Jones? Precedent for such testing occurred at the Tomb of the Unknowns at Arlington National Cemetery. Remains were positively identified, and they were removed. It may be that Horace Porter's efforts would be vindicated, but if they were repudiated, it would be more fitting for the crypt to serve as a memorial rather than venerated tomb.

CAROL RUTH AXELROD
MCLEAN, VIRGINIA

THE U.S. NAVAL ACADEMY Class of 1955 presented to the Naval Academy, on the occasion of their 50th class reunion, a completely renovated crypt for John Paul Jones. There is no doubt, at least in my mind, that his remains rest in peace there. Quite a fitting place for quite a remarkable Naval officer.

BART W. FORDHAM JR.
COLUMBIA, SOUTH CAROLINA

DUTY CALLED

"GRACE UNDER FIRE," about the heroic actions of mint superintendent Frank Leach and his compatriots during the fire following the 1906 San Francisco earthquake, was inspiring. It is a great example of extraordinary things done by ordinary people. The men saw their duty and, with the same unselfish spirit demonstrated by the 9/11 responders, did it.

TED L. MOLL
ST. LOUIS, MISSOURI

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WILD THINGS

LIFE AS WE KNOW IT

SLACKERS, TAKE NOTE

Polybia paper wasps in Costa Rica bite nestmates to goad them into foraging for food, water or building material, says the University of Washington's Sean O'Donnell, who studied the insects (left, a paint-daubed wasp bites another). Why do wasps need such prompting? While most wasps live a month or so, foragers generally are eaten, are crushed or work themselves to death within about six days of leaving the nest.

FLEEING VESUVIUS

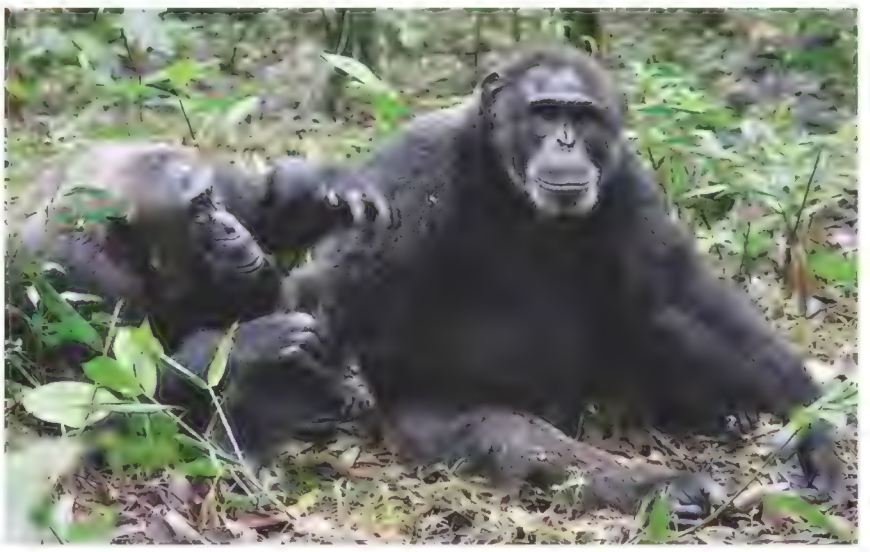
Sure, Mount Vesuvius erupted in A.D. 79 and entombed Pompeii. Now a University of Buffalo scientist and colleagues have uncovered evidence the volcano erupted even more violently some 2,000 years earlier. Thousands of human footprints excavated in deeper volcanic ash (left) indicate a mass flight. Many people did not escape; the researchers found skeletons of a woman and man probably suffocated by scalding dust. With Vesuvius erupting violently every 2,000 to 3,000 years, Naples may be in more peril than previously believed: about two-thirds of the metropolitan area falls within the 4,000-year-old blast zone.

HEADS UP

A newly discovered sauropod species called *Erketu ellisoni* (above, an artist's sketch) was not the biggest or the longest dinosaur. But the herbivore's nearly 2-foot-long vertebrae, among the fossil remains dug up in Mongolia's Gobi Desert, indicate that its neck measured 24 feet—the longest neck, relative to the rest of the body, of any known dinosaur. Daniel Ksepka, of New York City's American Museum of Natural History, suggests that air cavities in the animal's vertebrae, as well as two parallel ridges of bone that ran along the spine, possibly cradling a long ligament, helped *Erketu* keep its head (and chin) up.

Observed

NAME: *Sula nebouxii*, or blue-footed booby
OLD IMAGE: Getting mugged for food by the frigate bird, a co-resident of the Galápagos Islands
NEW IMAGE: Fathering chicks at Hugh Hefneresque ages
THIS HAPPENED HOW? Booby males, which live about 15 years, support the key evolutionary idea that long-lived animals increase their reproductive effort as they age and their chances for passing on their genes decline. In a recent study by Mexico City researchers, older male boobies injected with bacteria to mimic illness successfully raised 98 percent more fledglings than a control group. Younger injected males produced fewer fledglings than their controls. Interpretation? Young fathers saved their effort for future broods.



ITCHING TO COMMUNICATE

To direct someone's attention, point. Until now, zoologists had observed such "referential gestures" only in apes that interact with people. But a new study shows that wild chimpanzees in Uganda's Kibale National Park (above) signal what parts of their bodies they want groomed. And most of the time, the chimps' grooming partners went to work on the itchy spot. Study co-author Simone Pika of the University of St. Andrews in Scotland says chimps, our closest relatives, are better than we realized at giving—and following—the directions.

Visit Smithsonian.com to see chimps gesturing and grooming.

SEAN O'DONNELL / UNIVERSITY OF WASHINGTON; PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES; JASON BROUGHAM / AMERICAN MUSEUM OF NATURAL HISTORY; JOHN MITANI / UNIVERSITY OF MICHIGAN; DAMSCHEN ARCO / NATURE PICTURE LIBRARY

"I'M NOT just a scientist; I'm a diabetic, too," says Bill. "You might not think a drug company would want to prevent disease. But GSK wants to help people from ever developing diabetes. That's why we support programs that reward schools for providing healthier food alternatives – all because childhood obesity can lead to adult diabetes."

Finding a way forward. gsk GlaxoSmithKline

"I WAS NOT GIVING IN ON THE SHOES," SAYS THE BRIDE (WITH HER MOTHER, BETTY). BUT FOOTWEAR WAS A PROXY FOR BIGGER ISSUES.

Coal Miner's Daughter

"I'm 15. I'm getting married. My mother doesn't want me to get married." But that's just the beginning of the story

BY MARYALICE YAKUTCHIK

AFTER BLASTING her way through the hoot owl shift, harvesting West Virginia coal from midnight to 8 a.m., Betty Toler headed to a friend's house for the fitting of Toler's youngest daughter's wedding dress.

Jenny, the bride-to-be, asked for help with the bow on the back. Betty struck a match and a mother-knows-best pose—and made it plain that she opposed her 15-year-old daughter's plan to marry her teenage boyfriend. Then she lit a cigarette, hand-on-hip resolute. Jenny, equally resolute, sat on the bed and buried her face.

James Stanfield started shooting.

Stanfield, a photojournalist on assignment for the book *A Day in the Life of America*, had met Betty through the local mineworkers union. He had spent a shift with her in the mine, then followed her to a friend's house for Jenny's fitting. Anticipating a charming mother-daughter moment, he had set up a strobe light and electronic flash in the corner of the bedroom. Then the two butted heads.

"I didn't expect this situation to break out," Stanfield says 20 years later. "I never made the photograph I intended, but made one far better. It was one of these situations when you say, 'Is this really happening to me?' You just kind of hold

your breath to not break the mood or the spell."

Stanfield, who has been working for *National Geographic* magazine for 40 years, considers the May 2, 1986, portrait "one of my five nicest photographs." It occupies a two-page spread in an anthology of Stanfield's work. In lectures, he uses it to illustrate the necessity of bonding with subjects "so they no longer know you're there."

Both mother and daughter say they were indeed oblivious to his presence at the time. Even more remarkably, for two decades they were unaware this arresting glimpse into their lives even existed. Stanfield says he intended to send them copies, then got distracted by an assignment about the Ottoman Empire. Then came one about the pope. Then the president. Then nomads.

Meanwhile, mother and daughter faced pressing deadlines as well: Jenny's wedding was only weeks away, and the baby she was carrying was due within months.

"I ACTUALLY CRIED" AT SEEING THE PORTRAIT 20 YEARS AFTER THE FACT, SAYS BETTY (WITH DAUGHTER JENNY AND GRANDSON D.J.).

"It was all my decision. She did *not* let me down."

Jenny, 35, still lives in Wyoming County, West Virginia. She remembers: "I'm 15. I'm getting married. My mother doesn't want me to get married. But I'm stubborn and strong-willed. I'm not going to listen. It's going to be my way, even if it's wrong."

She speaks quietly, slowly, with just a trace of a drawl. "I was young, dumb and stupid. And in love for the first time. No mother's words—none whatsoever—can stack up to that."

"YOU JUST KIND OF HOLD YOUR BREATH," SAYS STANFIELD (ON ASSIGNMENT IN IRAQ).

So they fought. Betty kept insisting that her daughter wear heels and stockings; Jenny would not hear of it because the hand-me-down dress was a little short. She wanted to wear the gold-and-maroon-striped tube socks and sneakers she wore to the fitting. "I was not giving in on the shoes," she says.

In the end, Jenny compromised, walking down the aisle barefoot.

On October 15, 1986, she gave birth to a baby boy and named him Darrelle James. The marriage didn't last, but the mother-daughter bond held fast.

Within a year and a half, Jenny and baby D.J. came home to Betty's house to live with her and her second husband, Jimmy Toler. D.J., now 19, just left their house in Clear Fork, West Virginia, for Florida; Jenny lives a quarter-mile down the road from Betty with James Belcher, whom she married 12 years ago, and their two sons, Seth, 7, and Brian, 10.

Betty, now 57, says she enjoys nothing more than scouring yard sales with her grandkids for toys. After nine years digging coal—she quit in 1987 with health problems she chooses not to specify—she says she still misses it. "I loved my work," she says in a wistful rasp. "But I'm too sick. I have oxygen 24/7 and am supposed to do breathing treatments every day. But I never do what I'm told."

Betty and Jenny saw the Stanfield photograph for the first time only recently, after I e-mailed it to them in the course of researching this article.

And? "I think it's just an amazing picture," Jenny says. "It tells so much but shows little."

Betty says it evoked a feeling she has lived with for 20 years—the feeling that she had failed her daughter: "I actually cried. It took me a little while to get over it."

Jenny, once again, was firm with her mother: "I told her there was nothing she could have said or did that could have changed anything. It was all my decision. She did *not* let me down."

MARYALICE YAKUTCHIK *is a freelance writer living in Maryland.*

JAMES L. STANFIELD; PP. 20, 21 AND P. 22 BOTTOM: JAMES L. STANFIELD / NATIONAL GEOGRAPHIC IMAGE COLLECTION

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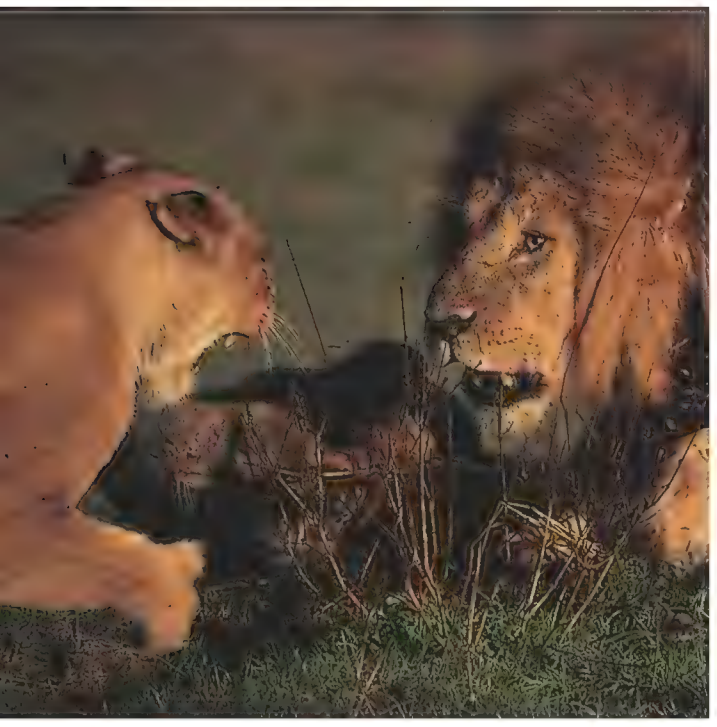
MAKING SENSE OF INVESTING

The Sound of Hoofs

In a breathtaking spectacle, wildebeest by the millions are on the move this month in the Serengeti

BY VIRGINIA MORELL · PHOTOGRAPHS BY ANUP AND MANOJ SHAH



EACH JUNE on Tanzania's Serengeti plains, animals resume a journey they've been making for millions of years. It's the drying of the grasses that triggers them and the scent of rain in the north that beckons them. Then, as if a herdsman had cracked a whip, wildebeest, zebra, gazelle and antelope sweep over the plains, and for a few weeks the Serengeti thrums with hoofs pounding against hard earth. These are sounds our hominid ancestors would have heard. And it is a scene they may have watched from a hillside overlooking the plains.

This is the largest mammal migration on the planet, and although ecologist Tony Sinclair and I had witnessed it on other occasions, we were still dumbstruck by the huge

THE ANNUAL WILDEBEEST MIGRATION (ABOVE, AT THE MARA RIVER) IS GOOD FOR LIONS—FOR MANY REASONS.

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"Take the wildebeest!" my racing heart chanted.

number of animals massed together. We were nothing more to them than a rock, an obstacle in their path. Our Land Rover parted their flood, and then the parted streams merged back together and the wildebeest continued en masse, doing what they have always done: eating their way across the plains, as much a force of nature as a wildfire or sudden storm.

It is this migration that many people picture when they think of wild Africa, and it was this migration that led the British colonial government to create the Serengeti National Park in 1951. By saving the Serengeti, one of the park's advocates wrote, they would preserve a small remnant of Africa's "original splendor, so that the black and white men who follow us will be able to see it in its awe-filled past glory."

A BOOMING WILDEBEEST POPULATION ALLOWED ACACIA FORESTS TO FLOURISH, WHICH THEN PROVIDED FOOD AND SHELTER FOR IMPALA.

"They thought the Serengeti was untouched, 'primeval' Africa," said Sinclair, an ecologist at the University of British Columbia at Vancouver. His 40-plus years of study here have left him weathered and freckled, and earned him the nickname Mr. Serengeti. "But of course it was neither of those things. We—humans, that is—had shaped it to a great degree, although no one realized it at the time."

Sinclair pointed to the wildebeest around us. "The wildebeest population now is about one and a half million," he said. "In the 1960s there were barely 200,000." After dropping to this low point, the wildebeest numbers began to rise again, as did the buffalo population. "The wildebeest and buffalo were increasing by leaps and bounds. And that's why the park service invited me here. They wanted to know why."

In pursuing that question, Sinclair discovered two things about the Serengeti that had escaped the park's founders. The first is that this land is far from being a slice of unchanged nature, a part of the wild frozen in time. "Everyone looks at the Serengeti and wants it to be lasting and unchanging," Sinclair said. "It may very well last, but it will most certainly change." The second is that wildebeest—these most unlovely ungulates with their scruffy beards and tails, twisted horns and goggle eyes—play the crucial role in the dynamic life of the Serengeti. "Without the wildebeest, there would not be a Serengeti. They are its lifeblood."

It's relatively easy to understand how the wildebeest might affect something like the number of lions in the park. The ungulate is one of the biggest meals a lion can bring down; at the height of the migration, lions need only wait by a gully or river crossing, then slap out a paw to put meat on their table. They lie brazenly on the roads, fat and dazed from the gorging. This leaves the wildebeest nervous and alert. A herd may be loping along rhythmically one moment, seemingly oblivious to anything other than the need to move, and in the next is heaving with panicked animals darting this way and that, trying to escape.

Once, some years ago, I camped with Sinclair, his wife, Anne, and his colleague Simon Mduma of the Tanzania Wildlife Research Institute on the banks of the Serengeti's Grumeti River. The migration was coming to an end, and several big herds of wildebeest settled near our tents for the night. I listened to them snorting and shuffling about, and then I heard the first lion's roar. Actually, I felt rather than heard it, the deep rumbling coming up through the ground as if the earth had a bad, dry cough. More lions joined in, and the thin walls of my tent seemed to vibrate with their roars. Involuntarily, I curled into a fetal position. My breathing sank to something less than shallow. Here I was, a skinny, little, clawless, hornless primate . . . on the ground. "Take the wildebeest," my racing heart chanted. "Take the big, fat, succulent wildebeest."

Maybe that's what the panic of the wildebeest is about: "Take him! Not me!"

Had the increased number of wildebeest led to a greater number of lions? I now asked Sinclair.

"Yes," he replied. "But not in the way you might think. Certainly, more prey means more to eat. But what has really helped the lions is the increasing forest cover—which is actually because of the wildebeest."

To understand how the wildebeest affect the trees and thus the lion population, you must know what was here

{ CONTINUED ON PAGE 30 }

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Atrophic gastritis has been noted occasionally in gastric corpus biopsies from patients treated long-term with omeprazole, of which NEXIUM is an enantiomer. **Information for Patients** NEXIUM Delayed-Release Capsules should be swallowed whole and taken at least one hour before meals. For patients who have difficulty swallowing capsules, one tablespoon of applesauce can be added to an empty bowl and the NEXIUM Delayed-Release Capsule can be opened, and the pellets carefully emptied onto the applesauce. The pellets should be mixed with the applesauce and then swallowed immediately. The applesauce used should not be hot and should be soft enough to be swallowed without chewing. The pellets should not be chewed or crushed. The pellet/applesauce mixture should not be stored for future use. Antacids may be used while taking NEXIUM. **Drug Interactions** Esomeprazole is extensively metabolized in the liver by CYP2C19 and CYP3A4. *In vitro* and *in vivo* studies have shown that esomeprazole is not likely to inhibit CYPs 1A2, 2A6, 2C9, 2D6, 2E1 and 3A4. No clinically relevant interactions with drugs metabolized by these CYP enzymes would be expected. Drug interaction studies have shown that esomeprazole does not have any clinically significant interactions with phenytoin, warfarin, quinidine, clarithromycin or amoxicillin. Post-marketing reports of changes in prothrombin measures have been received among patients on concomitant warfarin and esomeprazole therapy. Increases in INR and prothrombin time may lead to abnormal bleeding and even death. Patients treated with proton pump inhibitors and warfarin concomitantly may need to be monitored for increases in INR and prothrombin time. Esomeprazole may potentially interfere with CYP2C19, the major esomeprazole metabolizing enzyme. Coadministration of esomeprazole 30 mg and diazepam, a CYP2C19 substrate, resulted in a 45% decrease in clearance of diazepam. Increased plasma levels of diazepam were observed 12 hours after dosing and onwards. However, at that time, the plasma levels of diazepam were below the therapeutic interval, and thus this interaction is unlikely to be of clinical relevance. Coadministration of oral contraceptives, diazepam, phenytoin, or quinidine did not seem to change the pharmacokinetic profile of esomeprazole. Studies evaluating concomitant administration of esomeprazole and either naproxen (non-selective NSAID) or rofecoxib (COX-2 selective NSAID) did not identify any clinically relevant changes in the pharmacokinetic profiles of esomeprazole or these NSAIDs. Esomeprazole inhibits gastric acid secretion. Therefore, esomeprazole may interfere with the absorption of drugs where gastric pH is an important determinant of bioavailability (eg, ketoconazole, iron salts and digoxin). **Carcinogenesis, Mutagenesis, Impairment of Fertility** The carcinogenic potential of esomeprazole was assessed using omeprazole studies. In two 24-month oral carcinogenicity studies in rats, omeprazole at daily doses of 1.7, 3.4, 13.8, 44.0 and 140.8 mg/kg/day (about 0.7 to 57 times the human dose of 20 mg/day expressed on a body surface area basis) produced gastric ECL cell carcinoids in a dose-related manner in both male and female rats; the incidence of this effect was markedly higher in female rats, which had higher blood levels of omeprazole. Gastric carcinoids seldom occur in the untreated rat. In addition, ECL cell hyperplasia was present in all treated groups of both sexes. In one of these studies, female rats were treated with 13.8 mg omeprazole/kg/day (about 5.6 times the human dose on a body surface area basis) for 1 year, then followed for an additional year without the drug. No carcinoids were seen in these rats. An increased incidence of treatment-related ECL cell hyperplasia was observed at the end of 1 year (94% treated vs 10% controls). By the second year the difference between treated and control rats was much smaller (46% vs 26%) but still showed more hyperplasia in the treated group. Gastric adenocarcinoma was seen in one rat (2%). No similar tumor was seen in male or female rats treated for 2 years. For this strain of rat no similar tumor has been noted historically, but a finding involving only one tumor is difficult to interpret. A 78-week mouse carcinogenicity study of omeprazole did not show increased tumor occurrence, but the study was not conclusive. Esomeprazole was negative in the Ames mutation test, in the *in vivo* rat bone marrow cell chromosome aberration test, and the *in vivo* mouse micronucleus test. Esomeprazole, however, was positive in the *in vitro* human lymphocyte chromosome aberration test. Omeprazole was positive in the *in vitro* human lymphocyte chromosome aberration test, the *in vivo* mouse bone marrow cell chromosome aberration test, and the *in vivo* mouse micronucleus test. The potential effects of esomeprazole on fertility and reproductive performance were assessed using omeprazole studies. Omeprazole at oral doses up to 138 mg/kg/day in rats (about 56 times the human dose on a body surface area basis) was found to have no effect on reproductive performance of parental animals. **Pregnancy** *Teratogenic Effects. Pregnancy Category B* Teratology studies have been performed in rats at oral doses up to 280 mg/kg/day (about 57 times the human dose on a body surface area basis) and in rabbits at oral doses up to 86 mg/kg/day (about 35 times the human dose on a body surface area basis) and have revealed no evidence of impaired fertility or harm to the fetus due to esomeprazole. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed. Teratology studies conducted with omeprazole in rats at oral doses up to 138 mg/kg/day (about 56 times the human dose on a body surface area basis) and in rabbits at doses up to 69 mg/kg/day (about 56 times the human dose on a body surface area basis) did not disclose any evidence for a teratogenic potential of omeprazole. In rabbits, omeprazole in a dose range of 6.9 to 69.1 mg/kg/day (about 5.5 to 56 times the human dose on a body surface area basis) produced dose-related increases in embryo-lethality, fetal resorptions, and pregnancy disruptions. In rats, dose-related embryo/fetal toxicity and postnatal developmental toxicity were observed in offspring resulting from parents treated with omeprazole at 13.8 to 138.0 mg/kg/day (about 5.6 to 56 times the human doses on a body surface area basis). There are no adequate and well-controlled studies in pregnant women. Sporadic reports have been received of congenital abnormalities occurring in infants born to women who have received omeprazole during pregnancy. **Nursing Mothers** The excretion of esomeprazole in milk has not been studied. However, omeprazole concentrations have been measured in breast milk of a woman following oral administration of 20 mg. Because esomeprazole is likely to be excreted in human milk, because of the potential for serious adverse reactions in nursing infants from esomeprazole, and because of the potential for tumorigenicity shown for omeprazole in rat carcinogenicity studies, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother. **Pediatric Use** Safety and effectiveness in pediatric patients have not been established. **Geriatric Use** Of the total number of patients who received NEXIUM in clinical trials, 1459 were 65 to 74 years of age and 354 patients were ≥75 years of age. No overall differences in safety and efficacy were observed between the elderly and younger individuals, and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out. **ADVERSE REACTIONS** The safety of NEXIUM was evaluated in over 15,000 patients (aged 18-84 years) in clinical trials worldwide including over 8,500 patients in the United States and over 6,500 patients in Europe and Canada. Over 2,900 patients were treated in long-term studies for up to 6-12 months. In general, NEXIUM was well tolerated in both short- and long-term clinical trials. The safety in the treatment of healing of erosive esophagitis was assessed in four randomized comparative clinical trials, which included 1,240 patients on NEXIUM 20 mg, 2,434 patients on NEXIUM 40 mg, and 3,008 patients on omeprazole 20 mg daily. The most frequently occurring adverse events (≥1%) in all three groups was headache (5.5, 5.0, and 3.8, respectively) and diarrhea (no difference among the three groups). Nausea, flatulence, abdominal pain, constipation, and dry mouth occurred at similar rates among patients taking NEXIUM or omeprazole. Additional adverse events that were reported as possibly or probably related to NEXIUM with an incidence <1% are listed below by body system: ***Body as a Whole:*** abdomen enlarged, allergic reaction, asthenia, back pain, chest pain, chest pain substernal, facial edema, peripheral edema, hot flushes, fatigue, fever, flu-like disorder, generalized edema, leg edema, malaise, pain, rigors; ***Cardiovascular:*** flushing, hypertension, tachycardia; ***Endocrine:*** goiter; ***Gastrointestinal:*** bowel irregularity, constipation aggravated, dyspepsia, dysphagia, dysplasia GI, epigastric pain, eructation, esophageal disorder, frequent stools, gastroenteritis, GI hemorrhage, GI symptoms not otherwise specified, hiccup, melena, mouth disorder, pharynx disorder, rectal disorder, serum gastrin increased, tongue disorder, tongue edema, ulcerative stomatitis, vomiting; ***Hearing:*** earache, tinnitus; ***Hematologic:*** anemia, anemia hypochromic, cervical lymphoadenopathy, epistaxis, leukocytosis, leukopenia, thrombocytopenia; ***Hepatic:*** bilirubinemia, hepatic function abnormal, SGOT increased, SGPT increased; ***Metabolic/Nutritional:*** glycosuria, hyperuricemia, hyponatremia, increased alkaline phosphatase, thirst, vitamin B12 deficiency, weight increase, weight decrease; ***Musculoskeletal:*** arthralgia, arthritis aggravated, arthropathy, cramps, fibromyalgia syndrome, hernia, polymyalgia rheumatica; ***Nervous System/Psychiatric:*** anorexia, apathy, appetite increased, confusion, depression aggravated, dizziness, hypertonia, nervousness, hypoesthesia, impotence, insomnia, migraine, migraine aggravated, paresthesia, sleep disorder, somnolence, tremor, vertigo, visual field defect; ***Reproductive:*** dysmenorrhea, menstrual disorder, vaginitis; ***Respiratory:*** asthma aggravated, coughing, dyspnea, larynx edema, pharyngitis, rhinitis, sinusitis; ***Skin and Appendages:*** acne, angioedema, dermatitis, pruritus, pruritus ani, rash, rash erythematous, rash maculopapular, skin inflammation, sweating increased, urticaria; ***Special Senses:*** otitis media, parosmia, taste loss, taste perversion; ***Urogenital:*** abnormal urine, albuminuria, cystitis, dysuria, fungal infection, hematuria, micturition frequency, moniliasis, genital moniliasis, polyuria; ***Visual:*** conjunctivitis, vision abnormal. Endoscopic findings that were reported as adverse events include: duodenitis, esophagitis, esophageal stricture, esophageal ulceration, esophageal varices, gastric ulcer, gastritis, hernia, benign polyps or nodules, Barrett's esophagus, and mucosal discoloration. Two placebo-controlled studies were conducted in 710 patients for the treatment of symptomatic gastroesophageal reflux disease. The most common adverse events that were reported as possibly or probably related to NEXIUM were diarrhea (4.3%), headache (3.8%), and abdominal pain (3.8%). Postmarketing Reports – There have been spontaneous reports of adverse events with postmarketing use of esomeprazole. These reports have included rare cases of anaphylactic reaction and myalgia, severe dermatologic reactions, including toxic epidermal necrolysis (TEN, some fatal), Stevens-Johnson syndrome, and erythema multiforme, and pancreatitis. Rarely, hepatitis with or without jaundice has been reported. Other adverse events not observed with NEXIUM, but occurring with omeprazole can be found in the omeprazole package insert, **ADVERSE REACTIONS** section. **OVERDOSAGE** A single oral dose of esomeprazole at 510 mg/kg (about 103 times the human dose on a body surface area basis), was lethal to rats. The major signs of acute toxicity were reduced motor activity, changes in respiratory frequency, tremor, ataxia, and intermittent clonic convulsions. There have been some reports of overdosage with esomeprazole. Reports have been received of overdosage with omeprazole in humans. Doses ranged up to 2,400 mg (120 times the usual recommended clinical dose). Manifestations were variable, but included confusion, drowsiness, blurred vision, tachycardia, nausea, diaphoresis, flushing, headache, dry mouth, and other adverse reactions similar to those seen in normal clinical experience (see omeprazole package insert-**ADVERSE REACTIONS**). No specific antidote for esomeprazole is known. Since esomeprazole is extensively protein bound, it is not expected to be removed by dialysis. In the event of overdosage, treatment should be symptomatic and supportive. As with the management of any overdose, the possibility of multiple drug ingestion should be considered. For current information on treatment of any drug overdose, a certified Regional Poison Control Center should be contacted. Telephone numbers are listed in the Physicians' Desk Reference (PDR) or local telephone book. **DOSAGE AND ADMINISTRATION** Please see full Prescribing Information for recommended adult dosages and dosage adjustments for **Special Populations** for NEXIUM.

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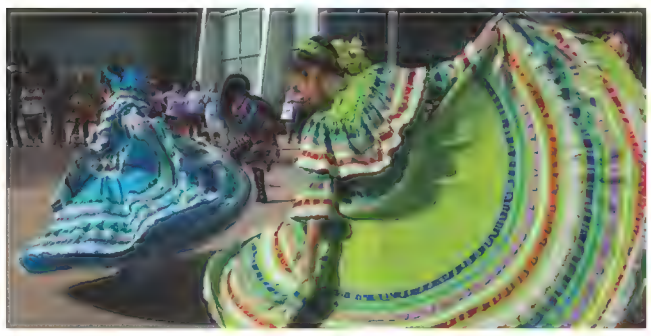

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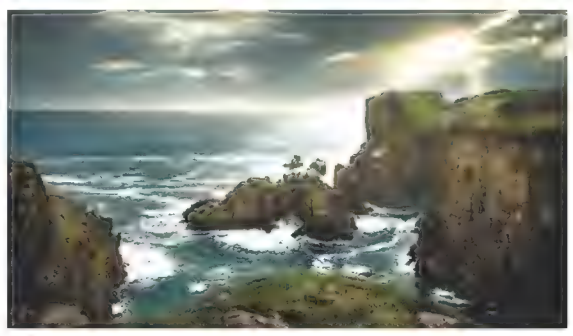

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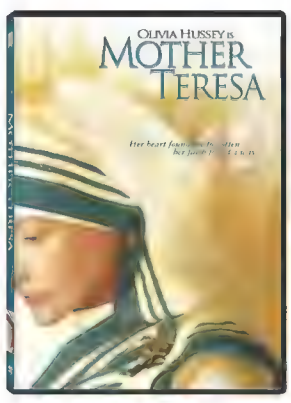

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For a few moments we held back the tide of animals.

in the past and what is here now. And that is what Sinclair has learned. Over the years, he has studied everything from the population dynamics of the herd animals and their predators to the effect grasshoppers have on the various types of grasslands. He has traveled to almost every corner of the 5,700-square-mile park, counting birds and acacia trees to assess how the various species of trees affect the number and variety of birds and butterflies. He has collected piles of buffalo bones to analyze the fat in their marrow, and he has counted seedlings and shrubs to measure the density of woodland thickets. When he sees a particular species, he jots its name and location in a pocket-size notebook. He also photographs key areas, such as the forests on certain hillsides or bordering major rivers—a record that shows how the tree cover comes and goes. And for the past two decades, he and Mduma have overseen a biodiversity survey of the park, slowly building up a record of its creatures. "None of this is very high tech," Sinclair said, "but if you keep at it long enough, you begin to see patterns, and then you can pick out changes in those patterns."

A VARIETY OF PREDATORS FEAST ON THE SKITTISH MIGRATING HERDS (A NILE CROCODILE MISSES A MEAL IN SERENGETI NATIONAL PARK).

Sinclair has pushed his base line back to the 1850s, using the accounts of explorers, hunters, slave and ivory traders and colonial administrators who ventured here. At that time, and presumably for thousands of years before, the Serengeti ecosystem encompassed some 13,000 square miles. The cattle-herding Maasai people, like the wildebeest, followed the greening of the grasses. To the Maasai, the plains were so vast they said you could walk your entire life and never reach the end. The grasslands were, in their Maa language, *siringet*: endless plains.

Today about three-quarters of the original habitat is protected in various reserves, the largest being Serengeti National Park with its adjoining game and conservation areas. Much of the rest has been converted into wheat farms, cattle ranches, villages and towns that hem the Serengeti to the north and west, limiting the movement of the animals. The wildebeest face a more direct human threat too. Poachers kill some 20,000 of them each year, both to eat and to sell in bush meat markets. (Sinclair estimates that wildebeest meat feeds about one million people.) But as the human population grows (at a hefty 4 percent annually in the towns along the Serengeti's western border), the number of poached wildebeest could double or triple. "If that happens, it will be a huge threat to the migration," said Sinclair. "It's simply not sustainable."

For now, though, the migration endures. The animals move from their southern home at the base of Ngorongoro Crater west into the heart of the Serengeti, then north and east across the Mara River into Kenya and its Maasai Mara National Reserve. In November they travel back, completing a clockwise journey through the plains—a distance of some 300 miles.

Did the migration follow this same route before the arrival of the Europeans in the interior of Africa in the mid-1800s?

"We don't know," said Sinclair. "I couldn't get a fix on the size of the herds, or what migration route they followed. What was clear was that the herds collapsed in the early 1900s. There was a horrific die-off. It was a seminal event for the Serengeti, with many long-range consequences. Let me show you what I mean."

He turned the key in the ignition, and the wildebeest that had been loping past us stopped abruptly to stare. For a few moments we held back the tide of animals. But then, having decided that we were not some deep-throated predator, they bent their heads toward the earth and pushed on. Sinclair drove past the herds, turned up another track, and headed straight north toward a low-slung range of hills. As we bumped through the dust and heat, he told me the story of the disease that changed the Serengeti.

IT'S COMMON these days to worry about epidemics from SARS, the Ebola virus or the bird flu coming in from the wild to kill off humankind. But "civilized" diseases can also wreak havoc in the natural world. In the late 1800s, Europeans unintentionally introduced rinderpest, a viral cattle disease, into East Africa. Although the virus was found in European and Asian cows,

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"There was an explosion of trees here in the Serengeti."

cattle in Africa had never been exposed to it, and, throughout the continent, they died. Rinderpest also swept through ungulates closely related to cattle, such as the wildebeest and buffalo.

"There were so many dead animals and so much food to scavenge that it was said the vultures forgot to fly," said Sinclair. He pulled to a stop below a tree-covered hill. "And when the animals—domestic and wild—died, the people died. There was dreadful starvation among the Maasai."

Over time the disease reached a sort of equilibrium. Every decade or so it would rise up and kill off cattle, wildebeest and buffalo. "The populations eventually stabilized," Sinclair said, "so that there were 15,000 buffalo and 100,000 to 200,000 wildebeest, and over the years everyone came to think that this was the way the Serengeti had always been."

"THE SERENGETI MAY WELL LAST, BUT IT WILL CERTAINLY CHANGE," SAYS SINCLAIR. (STORM CLOUDS ABOVE THE MAASAI MARA NATIONAL RESERVE HERALD THE END OF THE DRY SEASON.)

The disease brought other changes. Without prey to hunt, the number of lions, hyenas and other predators also dropped. And the number of trees increased.

A forest isn't the first thing that comes to mind when one thinks of the Serengeti. Yet when the colonial administration set up the first game reserve here in 1929, dense woodlands of thorny acacia trees had sprung up across the plains. The trees were even thicker when the park was officially established two decades later. But then they began to disappear.

"The older trees were all dying," said Sinclair, "and there weren't any seedlings. Something was killing the forest. And park officials were very worried. They were losing their 'natural, pristine' forest. They wanted to know why, and they wanted to know what to do. It was all very confusing. The wildebeest and buffalo were booming, and the trees were dying."

As it happens, an effective vaccination against rinderpest had been developed in the early 1960s, and veterinarians inoculated the cattle around the Serengeti. The wild ungulates began to rebound. But the trees continued to dwindle. One day in 1980 Sinclair came to the very spot where we were now sitting to photograph what he thought was one of the last trees in the Serengeti. "Here's the picture I took of this hillside," he said, pulling a yellowed photograph from a folder and pointing to the slope immediately across from us. In the photograph, a single acacia spreads its limbs over a barren, rocky slope.

When he returned to the spot five years later, Sinclair found that the tree was surrounded by hundreds of tiny, spindly seedlings. "There was an explosion of trees here, and in fact all over this part of the Serengeti. And ever since, the trees have been increasing and increasing. Just look at this hillside." Indeed, it was virtually hidden under a cover of dense young trees. "That's how quickly things can change here," Sinclair said.

Two things led to the forest's rebound. First, the wildebeest population grew to its current size, between 1.2 million and 1.5 million animals. And all those wildebeest ate more grass each year, in the process turning the long-grass plains into short-grass plains. As a result, human-set fires that sweep through the Serengeti each dry season don't burn as hot as they did when the grass stayed long and so do not consume as many acacia seedlings. "The elephants were also 'culled,'" Sinclair said, bracketing the word with his fingers. "Illegal hunters poached thousands of elephants here in the late 1970s and throughout the 1980s, leaving very few of them to eat the young trees. So, yes, the lions are increasing," Sinclair said. "But that's because of these dense forests that have grown up because the wildebeest keep the grasses short." More forest means more cover for the lions; they catch more prey, have more babies and form more prides. Their numbers go up.

But what if something happened to the wildebeest? "That is the one change it cannot withstand: the total loss of the wildebeest," Sinclair said. "They keep the entire ecosystem going. We would not have a Serengeti without them. It would be something else."

The Serengeti of the early 21st century is different from the Serengeti of 1950 and 1850. Aside from being smaller, its rhinos, elephants, roan antelope and wild dogs are far fewer. The Maasai people, who lived in the national park until the

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1950s, have been replaced by tourists, researchers and park employees in cars. One can argue about whether these changes made the park less natural. But in a time of great extinctions, here in the Serengeti we humans have done something rare: we have set aside a corner of the earth for the animals.

EARLY ONE EVENING I joined Sinclair's four Tanzanian research assistants on a nighttime survey. Ernest Eblate sat behind the wheel of the Land Rover, and I took a seat next to him while the other three crowded into the back. Eblate handed me a clipboard, saying, "You're our secretary tonight." The men in the back would be spotting and calling out the animals, and I would record their numbers, species and other details.

Eblate pointed the Land Rover north along a track. Once a month, the team drives a set distance on each track and counts the number and types of mammal species they see. Our track led past a steady stream of wildebeest munching their way across a short-grass plain, then through grasslands, riverine acacia forests and rocky hills. Eblate kept a careful eye on the odometer, and as soon as it registered the requisite 40 kilometers (about 25 miles), he swung the car around.

Night had settled and a chill breeze blew through the car. We pulled on jackets and sweaters, and the men pointed their lights into the hidden Serengeti. Eblate crept along, giving his colleagues time to search the tall grass and the thorny trees for the bright glow of an animal's eyes.

It didn't take long. In the trees, saucer-eyed bush babies leapt from branch to branch to escape the light, while reedbuck stood momentarily frozen in the grasses before bounding into the darkness. There were smaller antelopes, dik-diks, hovering close to the road, and hyenas slinking among the bushes in the distance. We inched down the track, spotting bat-eared foxes, black-backed jackals that turned tail and ran, and then two unexpected prizes: an aardwolf and a diminutive hedgehog, two of the Serengeti's rarest species. The hedgehog was the size of a tennis ball and sat tucked in a rut in the road beside some low bushes. Eblate had spotted this wee fellow, and we all praised him for his sharp eyes.

As we inched on into the night, my register grew ever longer. We found a cheetah mother with four half-grown cubs huddled in the grass, then spotted three sturdy klipspringers, small rock-climbing antelope that for some reason had left the safety of their boulders to stand in the road. "Get back to the rocks," Eblate ordered them. "There are lions out here."

And indeed a few miles farther on, we drove into the middle of a pride, five females and two young males. They'd been feeding, probably on an unlucky wildebeest, and watched us with sleepy eyes. One male stepped into the track and trotted ahead of us, his huge, meat-swollen belly swinging from side to side. He looked at us over his shoulder, then stumbled into the bushes, dropped to the ground and fell instantly asleep.

We found the wildebeests again, thousands of them. They loped steadily and silently over the grasses and under stands of acacia trees, a dark ribbon of animals winding through the night. The spotters' lights caught the wildebeests' eyes, and they glowed back at us like the candles of the faithful in a church processional.

"Wildebeest," someone said softly from the back seat. I marked it on the register. Wildebeest, too many to count. Wildebeest, on the move again, making their way over the Serengeti.

In the wildebeests' mowed path, the trees will sprout. In the trees' shadows, the lions will lurk. And in the canopies, birds and butterflies and insects of all sorts will flourish. This is the path that leads through the knotted tangle of life and change in the Serengeti.

Writer **VIRGINIA MORELL** *of Ashland, Oregon, co-authored the book* Wildlife Wars, *about efforts to save the African elephant. Wildlife photographers* **ANUP** *and* **MANOJ SHAH** *are based in Nairobi.*

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NEIL SHUBIN

PALEONTOLOGIST, UNIVERSITY OF CHICAGO

KEVIN HORAN

The "missing link?" At least a step in a new direction

BY LAURA HELMUTH

IS TIKTAALIK, THE FOSSIL YOU FOUND, TECHNICALLY A FISH? You might recognize it as a fish—it has fin webbing and scales on its back.

WHAT MAKES YOU THINK IT'S RELATED TO THE FIRST VERTEBRATE ANIMALS TO WALK ON LAND? It has a head that's shaped like some of the earliest land-living creatures. It has a neck—the head can move separately, unlike any fish but very similar to land animals—and an upper arm, a forearm and even parts of a wrist. It blurs the distinction between fish and land-living animals. We think this animal was able to support its body on the ground, whether that ground is underwater, or in the shallows, or even on land for brief periods.

TIKTAALIK LIVED ABOUT 375 MILLION YEARS AGO. WHAT WAS ITS WORLD LIKE? You would see some of the earliest forests and some invertebrate animals—centipede-like things. In the water you'd see a pretty hostile place, with lots of predatory fish with giant fangs.

IS THAT WHY TIKTAALIK—OR ITS DESCENDANTS—LEFT THE WATER? That's a compelling explanation, but there's also the fact that some of the invertebrates on land were large, pretty defenseless and probably nutritious.

YOU FOUND THESE FOSSILS IN NUNAVUT TERRITORY, IN ARCTIC CANADA. WHY THERE? We were actually looking for a fossil like this. By looking at maps and geological publications, we saw that the rocks were of the right age and the right type—they were formed in ancient stream environments. Another thing that's special about the Arctic is the rocks are at the surface. They're not hidden under plants or buildings or miniature golf courses.

BUT NUNAVUT WASN'T COLD 375 MILLION YEARS AGO? What is Nunavut today was straddling the Equator 375 million years ago. You see glaciers and musk ox there today, but when you look inside the rocks at your feet, you find a tropical world.

WAS THIS DISCOVERY A FLUKE? No, it wasn't. As we learn more about the history of life, and as we learn more about what rocks are preserved in different parts of the world, we can make these kinds of predictions.

SOME SCIENTISTS DISLIKE THE TERM "MISSING LINK." When people call Tiktaalik "the missing link," it implies there is a single fossil that tells us about the transition from water to land. Tiktaalik gains meaning when it's compared with other fossils in the series. So it's not "the" missing link. I would probably call it "a" missing link. It's also no longer missing—it's a found link. The missing links are the ones I want to find this summer.

Visit Smithsonian.com for additional interviews.

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VESIcare is for urgency, frequency, and leakage (overactive bladder). VESIcare is not for everyone. If you have certain types of stomach, urinary, or glaucoma problems do not take VESIcare. While taking VESIcare, if you experience a serious allergic reaction, severe abdominal pain, or become constipated for three or more days, tell your doctor right away. In studies, common side effects were dry mouth, constipation, blurred vision, and indigestion.

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Patient Information
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VESIcare® (solifenacin succinate) tablets

Read the Patient Information that comes with VESIcare before you start taking it and each time you get a refill. There may be new information. This leaflet does not take the place of talking with your doctor or other healthcare professional about your condition or treatment. Only your doctor or healthcare professional can determine if treatment with VESIcare is right for you.

What is VESIcare®?
VESIcare is a prescription medicine used in adults to treat the following symptoms due to a condition called overactive bladder:
- Having to go to the bathroom too often, also called "urinary frequency,"
- Having a strong need to go to the bathroom right away, also called "urgency,"
- Leaking or wetting accidents, also called "urinary incontinence."

VESIcare has not been studied in children.

What is overactive bladder?
Overactive bladder occurs when you cannot control your bladder contractions. When these muscle contractions happen too often or cannot be controlled, you can get symptoms of overactive bladder, which are urinary frequency, urinary urgency, and urinary incontinence (leakage).

Who should NOT take VESIcare®?
Do not take VESIcare if you:
- are not able to empty your bladder (also called "urinary retention"),
- have delayed or slow emptying of your stomach (also called "gastric retention"),
- have an eye problem called "uncontrolled narrow-angle glaucoma",
- are allergic to VESIcare or any of its ingredients. See the end of this leaflet for a complete list of ingredients.

What should I tell my doctor before starting VESIcare®?
Before starting VESIcare tell your doctor or healthcare professional about all of your medical conditions including if you:
- have any stomach or intestinal problems or problems with constipation,
- have trouble emptying your bladder or you have a weak urine stream,
- have an eye problem called narrow-angle glaucoma,
- have liver problems,
- have kidney problems,
- are pregnant or trying to become pregnant (It is not known if VESIcare can harm your unborn baby.),
- are breastfeeding (It is not known if VESIcare passes into breast milk and if it can harm your baby. You should decide whether to breastfeed or take VESIcare, but not both.).

Before starting on VESIcare, tell your doctor about all the medicines you take including prescription and nonprescription medicines, vitamins, and herbal supplements. While taking VESIcare, tell your doctor or healthcare professional about all changes in the medicines you are taking including prescription and nonprescription medicines, vitamins and herbal supplements. VESIcare and other medicines may affect each other.

How should I take VESIcare®?
Take VESIcare exactly as prescribed. Your doctor will prescribe the dose that is right for you. Your doctor may prescribe the lowest dose if you have certain medical conditions such as liver or kidney problems.
- You should take one VESIcare tablet once a day.
- You should take VESIcare with liquid and swallow the tablet whole.
- You can take VESIcare with or without food.
- If you miss a dose of VESIcare, begin taking VESIcare again the next day. Do not take 2 doses of VESIcare in the same day.
- If you take too much VESIcare or overdose, call your local Poison Control Center or emergency room right away.

What are the possible side effects with VESIcare®?
The most common side effects with VESIcare are:
- blurred vision. Use caution while driving or doing dangerous activities until you know how VESIcare affects you.
- dry mouth.
- constipation. Call your doctor if you get severe stomach area (abdominal) pain or become constipated for 3 or more days.
- heat prostration. Heat prostration (due to decreased sweating) can occur when drugs such as VESIcare are used in a hot environment.

Tell your doctor if you have any side effects that bother you or that do not go away.
These are not all the side effects with VESIcare. For more information, ask your doctor, healthcare professional or pharmacist.

How should I store VESIcare®?
- Keep VESIcare and all other medications out of the reach of children.
- Store VESIcare at room temperature, 50° to 86°F (15° to 30° C). Keep the bottle closed.
- Safely dispose of VESIcare that is out of date or that you no longer need.

General information about VESIcare®
Medicines are sometimes prescribed for conditions that are not mentioned in patient information leaflets. Do not use VESIcare for a condition for which it was not prescribed. Do not give VESIcare to other people, even if they have the same symptoms you have. It may harm them.

This leaflet summarizes the most important information about VESIcare. If you would like more information, talk with your doctor. You can ask your doctor or pharmacist for information about VESIcare that is written for health professionals. You can also call (800) 403-6565 toll free, or visit www.VESICARE.com.

What are the ingredients in VESIcare®?
Active ingredient: solifenacin succinate
Inactive ingredients: lactose monohydrate, corn starch, hypromellose 2910, magnesium stearate, talc, polyethylene glycol 8000 and titanium dioxide with yellow ferric oxide (5 mg VESIcare tablet) or red ferric oxide (10 mg VESIcare tablet)

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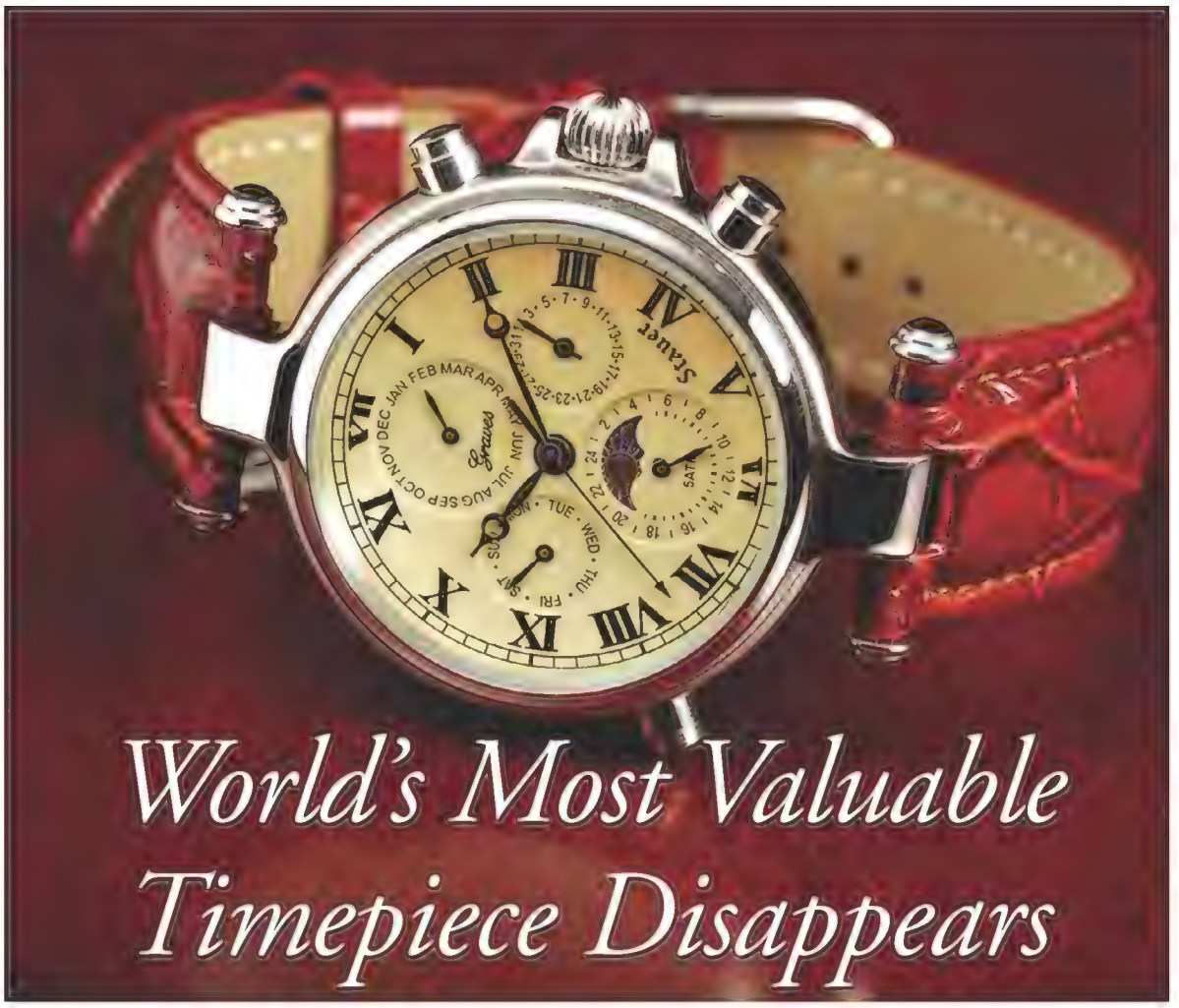

World's Most Valuable Timepiece Disappears

Back in 1933, the single most important watch ever built was engineered for a quiet millionaire collector named Henry Graves. It took over three years and the most advanced horological technique to create the multifunction masterpiece. This one-of-a-kind watch was to become the most coveted piece in the collection of the Museum of Time near Chicago. Recently this ultra-rare innovation was auctioned off for the record price of $11,030,000 by Sotheby's to a secretive anonymous collector. Now the watch is locked away in a private vault in an unknown location. We believe that a classic like this should be available to true watch afficionados, so Stauer replicated the exact Graves design in the limited edition Graves '33.

The antique enameled face and Bruguet hands are true to the original. But the real beauty of this watch is on the inside. We replicated an extremely complicated automatic movement with 27 jewels and seven hands. There are over 210 individual parts that are assembled entirely by hand and then tested for over 15 days on Swiss calibrators to insure accuracy. The watches are then reinspected in the United States upon their arrival.

What makes rare watches rare?

Business Week states it best…"It's the complications that can have the biggest impact on price." (*Business Week, July, 2003*). The four interior complications on our Graves™ watch display the month, day, date and the 24 hour clock graphically depicts the sun and the moon. The innovative engine for this timepiece is powered by the movement of the body as the automatic rotor winds the mainspring. It never needs batteries and never needs to be manually wound. The precision crafted gears are "lubricated" by 27 rubies that give the hands a smooth sweeping movement. And the watch is tough enough to stay water resistant to 5 atmospheres. The movement is covered by a 2-year warranty.

The face of the original 1930 s Graves timepiece from the Museum of Time.

Many fine 27-jewel automatics that are on the market today are usually priced well over $2,000 dollars, but you can enter the rarified world of fine watch collecting for under $100. Try the handsome Graves '33 timepiece risk free for 30 days. If you are not thrilled with the quality and rare design, please send it back for a full refund of the purchase price.

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Around the Mall

SCENES AND SIGHTINGS FROM THE SMITHSONIAN MUSEUMS AND BEYOND

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"Life is pretty hard to kill," says Erwin (at the Museum of Natural History, by a display of the Permian mass extinction).

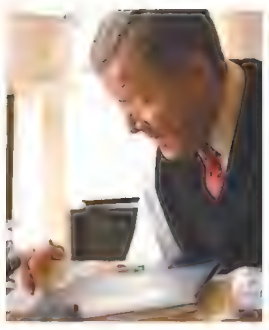
DAVID DEAL

THE GREAT DYING Two hundred fifty million years ago, life on earth nearly stopped. In less than 160 thousand years—a geologic snap of the fingers—a mass extinction wiped out 95 percent of life in the oceans and 70 percent of life on land, ending the Permian era, a golden age of biodiversity. Nobody knows why.

In his new book, *Extinction*, Smithsonian paleontologist Douglas H. Erwin, a leading expert on the Permian downfall { CONTINUED ON PAGE 42 }

FROM THE SECRETARY | Pride of Place

A new national museum will tell the story of centuries of African-American struggle and achievement



PROUDER than ever of her grandfather, who was a railroad porter in the 1920s, a woman from St. Louis recently wrote to the Smithsonian of her excitement about the site selected in January for the National Museum of African American History and Culture (NMAAHC). "I can't get over the fact," she wrote to us, "that [my grandfather's] story will be told on the National Mall."

A Pullman porter's job was to look after the needs of exclusively white passengers in sleeping cars; most porters did it with dignity and pride, but the pay and working conditions were far beneath what they deserved. It was the determination and leadership of A. Philip Randolph that enabled the Brotherhood of Sleeping Car Porters, which he founded, to become the first African-American union in the United States to win a collective bargaining agreement. That lifted many poor black families into the middle class and helped open the door to numerous civil rights gains.

The porter's granddaughter is especially delighted because she knows the honor for her grandfather—and for herself—is a national one; the new museum will be on prime Washington real estate, just west of the National Museum of American History, near the White House and less than a mile from and almost in view of the Lincoln Memorial, where Martin Luther King Jr. so eloquently proclaimed his dream for America.

The new building will open in less than a decade, and NMAAHC director Lonnie Bunch and his staff are already busy with speeches and public discussions and programs. They are also creating an engaging, interactive Web presence (nmaahc.si.edu), which will enhance NMAAHC programming by encouraging on-line participation—and will offer virtual tours of exhibitions. By providing a forum for dialogue, the site will allow visitors to experience the growth of the museum and will give the public a sense of ownership in its development.

This summer, in conjunction with the Smithsonian's Center for Folklife and Cultural Heritage, the NMAAHC will present a concert series on the Mall as part of the annual Folklife Festival (June 30 to July 4 and July 7 to 11; see folklife.si.edu/festival/2006/). The concerts will highlight musical traditions from hurricane-ravaged New Orleans and will include New Orleans jazz and brass bands, gospel, rhythm and blues and the processional music of the Mardi Gras Indians.

A traveling exhibition called "Let Your Motto Be Resistance: African American Portraiture" is another collaborative effort, this one with the National Portrait Gallery. It will trace the history of African-American portraiture from the late 1800s to the present and will feature such well-known photographers as Berenice Abbott, William Gottlieb, Gordon Parks and James VanDerZee, and prominent people such as Sojourner Truth, Nat King Cole and Judith Jamison, as well as lesser-known people like abolitionist Henry Highland Garnet. Born a slave, he became a skilled and militant orator and the U.S. minister to Liberia.

Born a slave, Henry Highland Garnet (c.1881) became minister to Liberia.

Especially important now is NMAAHC's initiative to "Save Our African American Treasures." Much of African-American material culture—photographs and artifacts—is in basements and attics. Before valuable items are lost, NMAAHC wants to work with the public as well as other museums and cultural institutions to preserve them. After all, these are the treasures that will help illustrate the stories that the National Museum of African American History and Culture will tell—stories of pain and achievement and pride. We create this museum so that great-great-great-granddaughters and other descendants of African-American porters and inventors, slaves and CEOs—together with *all* visitors—will be able to see this heritage brought to life.

LAWRENCE M. SMALL
SECRETARY OF THE SMITHSONIAN INSTITUTION

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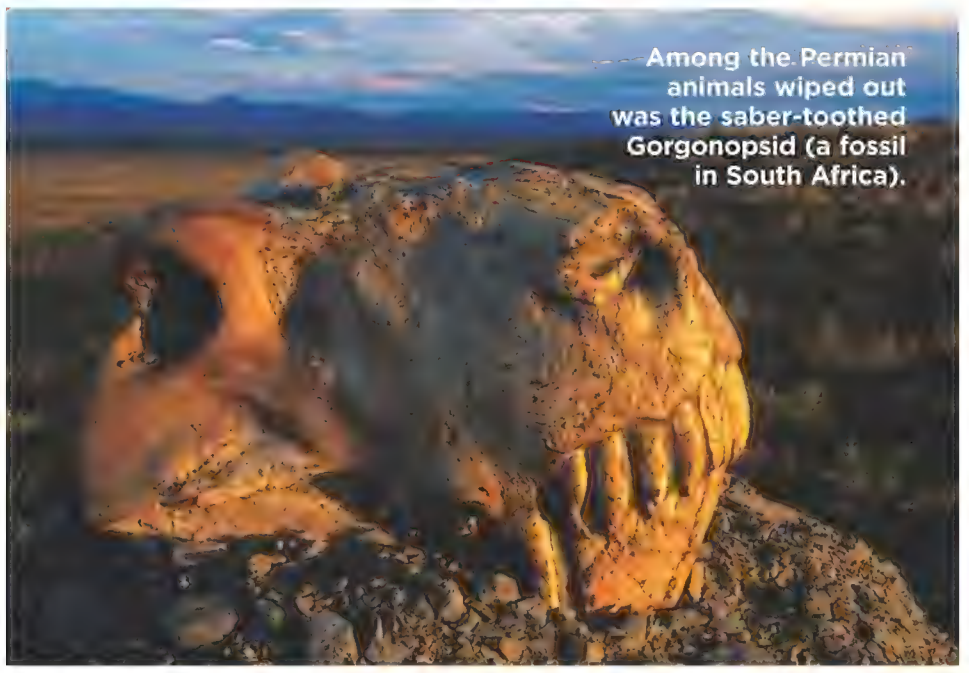

THE GREAT DYING

{ CONTINUED FROM PAGE 39 }

at the National Museum of Natural History, scrutinizes the litany of causes that scientists have proposed. They range from those that he says are plausible (when the supercontinent Pangaea formed, species newly exposed to each other competed to death) to those that seem downright unlikely (carcinogenic dark matter from outer space bombarded the earth, inducing a worldwide cancer epidemic).

Erwin favors the Siberian flood basalt eruption, the largest volcanic event in the past 600 million years. It inundated an area the size of the United States with lava over the course of a million years. In some places the lava was more than three miles deep. The eruption would have released immense quantities of carbon dioxide and methane into the atmosphere, producing downpours of acid rain. Debris blocked the sun, triggering global cooling, followed by intense global warming as the carbon dioxide spurred a runaway greenhouse effect. Plants and animals didn't have time to adapt. In the oceans, rising temperatures decreased the solubility of oxygen, suffocating marine life.

Still, Erwin doesn't like to point the finger at any one cause. "Scientists tend not to like multiple things going wrong because it is easier to test a single hypothesis," he says. "But if you have read any history at all, you know that is not how things work."

History, of course, also has a tendency to repeat itself. A United Nations environmental report in March says that, for a variety of reasons, including global warming, "we are currently responsible for the sixth major extinction event in the history of Earth." According to the World Conservation Union, 23 percent of all mammals, 46 percent of all fish and 70 percent of all plants are threatened with extinction. But Erwin and other experts believe that we haven't yet caused a mass extinction. "We don't know when the disaster will happen, but if we don't slow down, we won't be able to turn it around," says Richard K. Bambach, an emeritus Virginia Tech paleontologist.

The Permian dying off changed life. The 5 percent of species that survived tended to be meatier and more physically active than the ones that perished. In the oceans, passive filter feeders yielded to dynamic predators. On land, dinosaurs rose to power. "The real message of the Permian," Bambach says, "is that when you make big changes in a short period of time, you end up with consequences that you may not have seen coming."

{ BY JENNIFER DRAPKIN }

Fine Art Ascends to Hog Heaven

If you think motorcycles and fine art mix about as well as motor oil and watercolors, cruise over to Don Smolinski's Harley Davidson dealership in Hughesville, Maryland. Since April, the showroom of glittering hogs has also displayed *The March of Time*, a huge 116-year-old painting that Smolinski and his brother Bob bought from the Smithsonian American Art Museum.

The 21- by 12-foot oil painting of Civil War veterans marching through Boston Common was done by Canadian Henry Sandham and completed in 1890. The artist then donated it to the Smithsonian, which stored it for a century before de-accessioning the piece because Sandham's work never made much of an impression in the United States. The museum sold the artwork to the Smolinskis for $1,500 in 1999 after it failed to sell at an auction.

For the Smolinskis, the highlight is the pointy-bearded visage of their grandfather, Joseph Smolinski, in the crowd of spectators. The painter had included Smolinski, a clerk in the War Department, to thank him for helping recruit Civil War vets to pose for the tableau, say the brothers. The painting cost more than $70,000 to restore. "These war veterans were staring me in the face," Bob Smolinski says. "Gave me a sense of awe inside." And now the vets can awe bikers too.

{ BY ULRICH BOSER }

"You usually have to go to a museum to see something like this," says Don Smolinski (in his Harley Davidson dealership in Hughesville, Maryland). He bought the 12-foot-tall oil painting, *The March of Time,* from the Smithsonian.

JONATHAN BLAIR / NATIONAL GEOGRAPHIC IMAGE COLLECTION; DAVID Y. LEE

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THE OBJECT AT HAND | EV1

NATIONAL MUSEUM OF AMERICAN HISTORY

THE RELATIVELY BRIEF HISTORY of the automobile echoes with romantic stories of lost causes, undeserved failures, great ideas unheeded, righteous hopes dashed, prophets before their time and heroes overwhelmed. Innovative also-rans litter the landscape of the chrome-bright past, felled by forces too formidable or a market too fickle. The 1948 Tucker, a surprisingly advanced car, is one spinout on the boulevard of broken axles. The Cord was a much-admired failure, as were the Kaiser, with its pop-out safety windshield, the beautiful Raymond Loewy-designed Studebaker Starliner and the sporty 1950s Nash-Healy. Though all these worthies signaled new directions and influenced the future, they failed.

DEAD END

Fans of a battery-powered, emissions-free sedan mourn its passing

BY OWEN EDWARDS

The loss of such cars saddened enthusiasts, but rarely has a vehicle's demise occasioned an actual funeral. But just such a send-off, at the Hollywood Forever Cemetery in Los Angeles, marked the passing on July 24, 2003, of General Motors' sleek, futuristic, battery-powered, emissions-free EV1.

Behind a white hearse circling the cemetery and to the sounds of a bagpiper rolled a line of EV1s, their devoted drivers taking a literal last ride in the cars they had leased from GM. Many extinct cars continue to exist as collectors' treasures; in rust-free California, for example, such evolutionary casualties as Edsels, Corvairs and Studebaker Avantis tool down freeways. But the EV1, an innovatively engineered attempt to jump-start GM's 21st century, will never again be driven by loyal fans. Although some 1,100 of the vehicles were produced since 1996 and leased to drivers in California and Arizona, almost all were destroyed once the leases ran out. For many of the lessees, this was a tragedy. As one owner wrote in an open letter to GM CEO Rick Wagoner, ". . . the EV1 is more than a car, it's a path to national salvation."

The production car's sleek look and exceptional aerodynamics are largely credited to Paul MacCready, CEO of AeroVironment, who also designed the first human-powered aircraft to cross the English Channel. It was up to GM chief designer Dennis Little and lead designer Mark Kaski to make the radical aerodynamics work in a street-ready car. "American automakers are criticized for not being innovative," says Bill Withuhn, a curator at the National Museum of American History (NMAH). "But GM was way out ahead with the EV1, and even though production was limited, a lot was learned by designing it."

Many factors contributed to the failure of a car

Although owners prized their EV1s (demonstrators, inset, protested the scrapping of the last of these vehicles at a GM facility last year), the manufacturer did not relent.

DANNY MOLOSHOK / AP / WIDE WORLD PHOTOS; JEFF TINSLEY / NATIONAL MUSEUM OF AMERICAN HISTORY, S. I.

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that was not, technically, a failure. The original version's range was only about 100 miles before the cars had to be plugged in for a recharge. (Battery life was somewhat improved in two later iterations.) "A lot of people failed to understand that the EV1 was a commuter car—not a long-haul California to New York car," notes Withuhn. But many drivers log more than 100 miles a day, and while the EV1's range sufficed for suburban driving, as a two-seater it didn't work for families with kids. And even some admirers of its design faulted the way it drove. "The car was fast," says RJ Muna, a photographer who shot many of the EV1's advertising pictures, "but the batteries made it heavy, and with a rear axle narrower than the front, the handling felt odd." Perhaps the most telling blow, however, for the all-electric car was the development of gas-electric hybrids such as the Toyota Prius, capable of recharging their batteries while cruising down the highway.

Only 40 EV1s were preserved, according to Jill Banaszynski, manager of the EV1 donation program, to be given to museums and institutions or kept for research by GM. Of these, the only fully intact EV1, complete with its (now inert) lead acid battery, is today part of the NMAH collection. "Our requirement is that all the vehicles in the museum have to be complete models," says Withuhn. "We may remove parts, but we have to know that if we wanted to drive a car, or a steam engine, we could—not that we would. It's a question of authenticity."

This stipulation initially posed a problem for GM, which had decided to take the cars off the road because only a relative handful of technicians knew how to work safely on the powerful batteries. But a series of negotiations proved fruitful, and the museum, in March of 2005, received its own complete example of an exemplary machine.

OWEN EDWARDS *is executive editor of* Edutopia, *a magazine about education.*

Q&A

The fashion designer **ISAAC MIZRAHI**, who designed the costumes for the Broadway revival of Bertolt Brecht's *Threepenny Opera*, has created blue denim aprons for conservators at the American Art Museum and the National Portrait Gallery, due to reopen in July.

WAS IT HARDER TO DESIGN CLOTHING ITEMS FOR THE SMITHSONIAN THAN, SAY, A RHINESTONE DOG COLLAR FOR TARGET? Some things are harder to design than others. The idea I had for the conservators was aprons instead of lab coats. Lab coats can be so constraining. It's like how nobody wears couture suits to work anymore. People wear ordinary clothes. So I thought a little apron would do the trick. I love blue denim because it democratizes everything. And one size really does fit all. I hate to use this word, but it's very proletariat. I guess I've been reading a lot of Brecht lately.

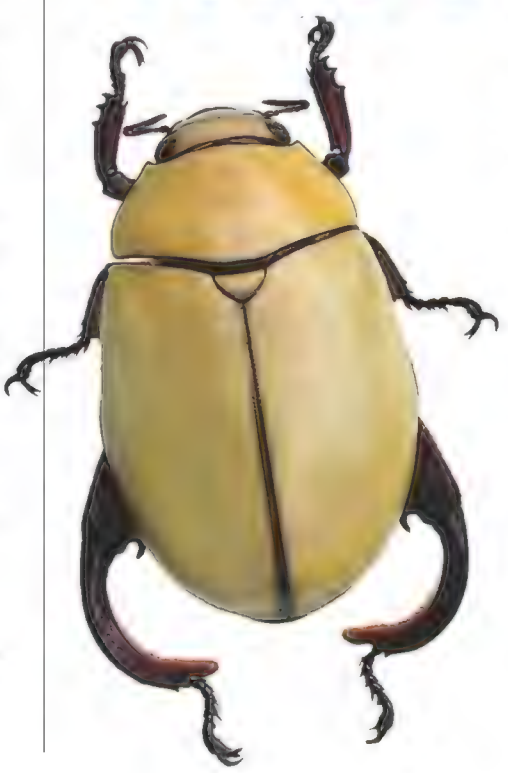
IT'S EASY TO GET *THE THREEPENNY OPERA* STUCK IN YOUR HEAD. GROWING UP, YOU WENT TO AN ORTHODOX JEWISH SCHOOL IN BROOKLYN. DID YOU IMAGINE FASHION DESIGN WOULD BE YOUR LIFE PATH? Oh, I'm doing exactly the same thing now as then. I started by making puppet shows as a child. I sewed and carved wood and added strings and wrote music to go with my shows. When I was in yeshiva it was rough because I wasn't understood and I was an outsider. But then I went to a performing arts high school, where everyone was a crazy actor or singer or dancer—it was a culture shock, but it was wonderful to be accepted.

Visit Smithsonian.com for more of the Q&A with Isaac Mizrahi.

IT'S STRANGE, BUT DO YOU EVER FIND THAT YOU SOMETIMES MISS BEING ALIENATED? Oh, yes. It's just like how success is often just as awful as failure. Ten years ago, I had to close my fashion line because it failed. And since then I have had varying levels of busyness—right now I'm really busy—but I sometimes miss the days when I had nothing to do but play computer bridge. I miss being a little sad. Because that's where great art comes from. I guess I'm thinking about Brecht again.

{ INTERVIEW BY JENNIFER DRAPKIN }

Who's Counting?



330,000

scarab beetles from the Museum of Natural History are on loan to the University of Nebraska. The family of 35,000 species includes, yes, the June bug.

JAMES PATRICK COOPER / RETNA; M. L. JAMESON / UNIVERSITY OF NEBRASKA

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What's Up

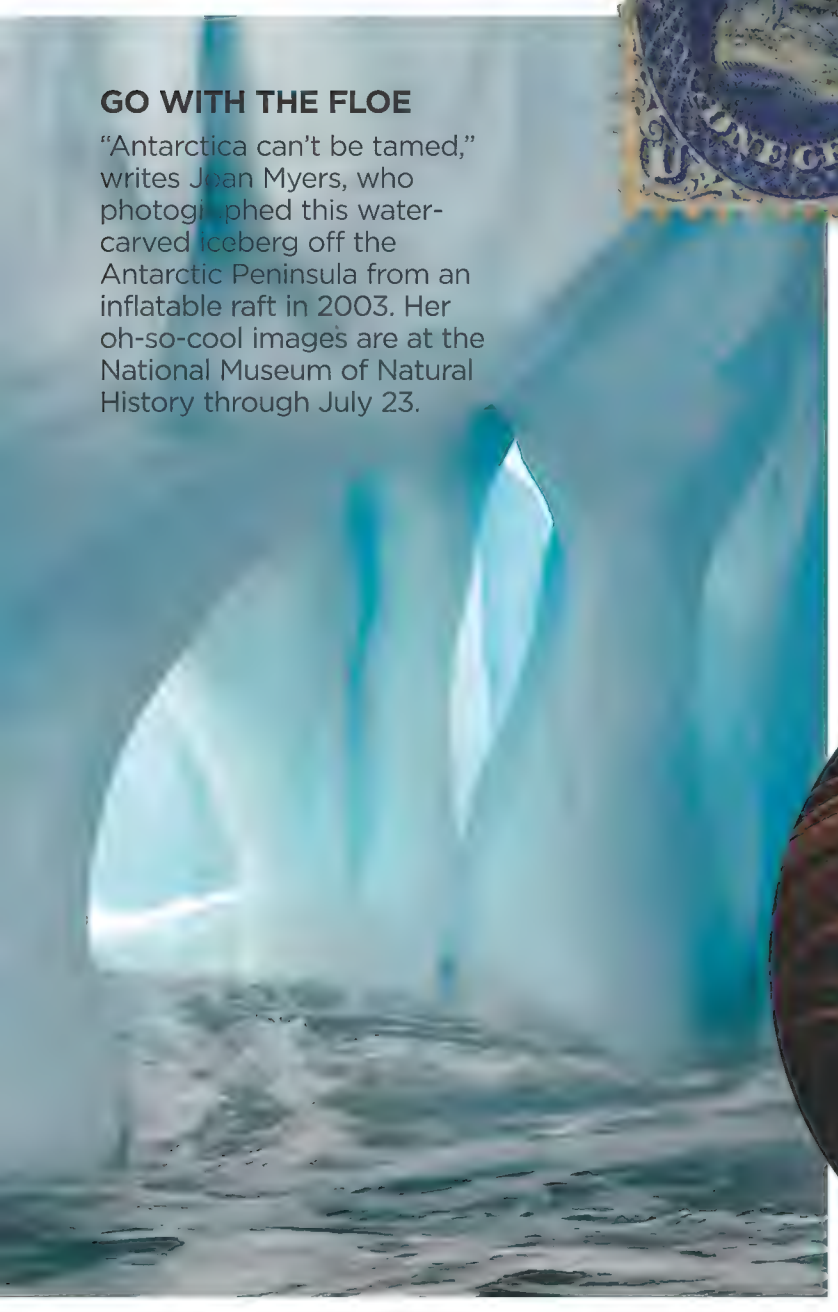
INVESTIGATING ORCHIDS Not only are orchids studied at the Smithsonian Environmental Research Center in Maryland (right, *Brassavola nodosa*), they thrive on the 3,000-acre grounds, which, for the first time, are open to the public Monday through Saturday.

STAMPEDE

This 1868 stamp is worth $935,000. No kidding. It's the rarest U.S. issue. Just two exist. See one at the Postal Museum through September.

GO WITH THE FLOE

"Antarctica can't be tamed," writes Joan Myers, who photographed this water-carved iceberg off the Antarctic Peninsula from an inflatable raft in 2003. Her oh-so-cool images are at the National Museum of Natural History through July 23.



NATIVE BEAUTY

Form surpasses function? 400 objects (a 19th-century Tsimshian mask) from 11 Pacific Coast tribes become exquisite artworks at the American Indian Museum, to January 2.

ORIGINS OF ECOTOURISM

Lured by romantic landscapes, 19th-century nature lovers flocked to Yosemite, Niagara Falls and the Catskills. Travel-related ephemera and paintings (an 1873 Winslow Homer) are at New York City's Cooper-Hewitt until October 22.

KIDS WITH CAMERAS

Elementary students in Southeast Washington, D.C. captured decisive moments, including refreshing takes on the national pastime (above). At the Anacostia Museum through August 27.

{ BY BETH PY-LIEBERMAN }

BRIAN MILLER / SERC, S.I.; BENJAMIN K. MILLER STAMP COLLECTION, NEW YORK PUBLIC LIBRARY / NATIONAL POSTAL MUSEUM, S.I.; WINSLOW HOMER, "MAN WITH A KNAPSACK," 1873, COOPER-HEWITT, NATIONAL DESIGN MUSUEM, S.I. ; STACHAUN JACKSON / ANACOSTIA MUSEUM, S.I.; ERNEST AMOROSO / NMAI, S.I.; JOAN MYERS / NMNH, S.I.

VISIT THE SMITHSONIAN For a free Associates' planning packet, call 202 633-1000 or 202 357-1729 (TTY), 9 a.m. to 5 p.m. Monday through Friday and 9 a.m. to 4 p.m. Saturday. Or send an e-mail to info@si.edu. The Smithsonian Information Center in the Castle is open daily, 8:30 a.m. to 5:30 p.m. Members can visit the reception desk between 9 a.m. and 4 p.m. to register for a behind-the-scenes tour and to hear about membership benefits. Most museums are open daily, 10 a.m. to 5:30 p.m. All museums are closed December 25.

Visit Smithsonian.com for a complete list of events and exhibitions.

When it comes to bad cholesterol–

Ask your doctor if lower is better.

Getting high cholesterol down is important.

Doctors know lowering high cholesterol is important for everyone. But for some people, it's even more important. In fact, a panel of medical experts recently proposed updated guidelines suggesting many patients aim for an even lower cholesterol goal than before.*

Working with your doctor is key to helping you reach your cholesterol goal.

If, after all you've tried—including diet and exercise—your doctor believes you need to get your bad cholesterol even lower, ask whether CRESTOR might help.

Aim lower.

CRESTOR may make the difference you need. In fact, the 10-mg dose of CRESTOR, along with diet, can lower bad cholesterol by as much as 52% (vs 7% with placebo). That means your LDL-C—the bad cholesterol—could go down about half. Your results may vary.

Is CRESTOR right for you?

That's another conversation you need to have with your doctor. Your doctor will decide the best course of treatment for you after assessing your particular needs.

Get more information about CRESTOR.

To learn more about CRESTOR, or if you are without prescription coverage and can't afford your medication, AstraZeneca may be able to help. Call 800-CRESTOR or visit CRESTOR.com.

Here is important safety information about CRESTOR you need to know.

CRESTOR is prescribed along with diet for lowering high cholesterol and has not been determined to prevent heart disease, heart attacks, or strokes. CRESTOR is not right for everyone, including women who are nursing, pregnant, or who may become pregnant, or anyone with liver problems. Your doctor will do blood tests before and during treatment with CRESTOR to monitor your liver function. Unexplained muscle pain and weakness could be a sign of a rare but serious side effect and should be reported to your doctor right away. The 40-mg dose of CRESTOR is only for patients who do not reach goal on 20 mg. Be sure to tell your doctor if you are taking any medications. Side effects occur infrequently and include muscle aches, constipation, weakness, abdominal pain, and nausea. They are usually mild and tend to go away.

If your doctor says, "lower is better," aim lower with CRESTOR.

CRESTOR®
rosuvastatin calcium

*Adult Treatment Panel (ATP) III, Update, 2004

Please read the important Product Information about CRESTOR on the adjacent page and discuss it with your doctor.

AstraZeneca

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Please read this summary carefully and then ask your doctor about CRESTOR. No advertisement can provide all the information needed to determine if a drug is right for you. This advertisement does not take the place of careful discussions with your doctor. Only your doctor has the training to weigh the risks and benefits of a prescription drug.

BRIEF SUMMARY: For full Prescribing Information, see package insert. **INDICATIONS AND USAGE** CRESTOR is indicated: 1. as an adjunct to diet to reduce elevated total-C, LDL-C, ApoB, nonHDL-C, and TG levels and to increase HDL-C in patients with primary hypercholesterolemia (heterozygous familial and nonfamilial) and mixed dyslipidemia (Fredrickson Type IIa and IIb); 2. as an adjunct to diet for the treatment of patients with elevated serum TG levels (Fredrickson Type IV); 3. to reduce LDL-C, total-C, and ApoB in patients with homozygous familial hypercholesterolemia as an adjunct to other lipid-lowering treatments (e.g., LDL apheresis) or if such treatments are unavailable. **CONTRAINDICATIONS** CRESTOR is contraindicated in patients with a known hypersensitivity to any component of this product. Rosuvastatin is contraindicated in patients with active liver disease or with unexplained persistent elevations of serum transaminases (see WARNINGS, Liver Enzymes). **Pregnancy and Lactation** Atherosclerosis is a chronic process and discontinuation of lipid-lowering drugs during pregnancy should have little impact on the outcome of long-term therapy of primary hypercholesterolemia. Cholesterol and other products of cholesterol biosynthesis are essential components for fetal development (including synthesis of steroids and cell membranes). Since HMG-CoA reductase inhibitors decrease cholesterol synthesis and possibly the synthesis of other biologically active substances derived from cholesterol, they may cause fetal harm when administered to pregnant women. Therefore, HMG-CoA reductase inhibitors are contraindicated during pregnancy and in nursing mothers. ROSUVASTATIN SHOULD BE ADMINISTERED TO WOMEN OF CHILDBEARING AGE ONLY WHEN SUCH PATIENTS ARE HIGHLY UNLIKELY TO CONCEIVE AND HAVE BEEN INFORMED OF THE POTENTIAL HAZARDS. If the patient becomes pregnant while taking this drug, therapy should be discontinued immediately and the patient apprised of the potential hazard to the fetus. **WARNINGS Liver Enzymes** HMG-CoA reductase inhibitors, like some other lipid-lowering therapies, have been associated with biochemical abnormalities of liver function. The incidence of persistent elevations (>3 times the upper limit of normal [ULN] occurring on 2 or more consecutive occasions) in serum transaminases in fixed dose studies was 0.4, 0, 0, and 0.1% in patients who received rosuvastatin 5, 10, 20, and 40 mg, respectively. In most cases, the elevations were transient and resolved or improved on continued therapy or after a brief interruption in therapy. There were two cases of jaundice, for which a relationship to rosuvastatin therapy could not be determined, which resolved after discontinuation of therapy. There were no cases of liver failure or irreversible liver disease in these trials. **It is recommended that liver function tests be performed before and at 12 weeks following both the initiation of therapy and any elevation of dose, and periodically (e.g., semiannually) thereafter.** Liver enzyme changes generally occur in the first 3 months of treatment with rosuvastatin. Patients who develop increased transaminase levels should be monitored until the abnormalities have resolved. Should an increase in ALT or AST of >3 times ULN persist, reduction of dose or withdrawal of rosuvastatin is recommended. Rosuvastatin should be used with caution in patients who consume substantial quantities of alcohol and/or have a history of liver disease (see CLINICAL PHARMACOLOGY, Special Populations, Hepatic Insufficiency). Active liver disease or unexplained persistent transaminase elevations are contraindications to the use of rosuvastatin (see CONTRAINDICATIONS). **Myopathy/Rhabdomyolysis Rare cases of rhabdomyolysis with acute renal failure secondary to myoglobinuria have been reported with rosuvastatin and with other drugs in this class.** Uncomplicated myalgia has been reported in rosuvastatin-treated patients (see ADVERSE REACTIONS). Creatine kinase (CK) elevations (>10 times upper limit of normal) occurred in 0.2% to 0.4% of patients taking rosuvastatin at doses up to 40 mg in clinical studies. Treatment-related myopathy, defined as muscle aches or muscle weakness in conjunction with increases in CK values >10 times upper limit of normal, was reported in up to 0.1% of patients taking rosuvastatin doses of up to 40 mg in clinical studies. In clinical trials, the incidence of myopathy and rhabdomyolysis increased at doses of rosuvastatin above the recommended dosage range (5 to 40 mg). In post-marketing experience, effects on skeletal muscle, e.g. uncomplicated myalgia, myopathy and, rarely, rhabdomyolysis have been reported in patients treated with HMG-CoA reductase inhibitors including rosuvastatin. As with other HMG-CoA reductase inhibitors, reports of rhabdomyolysis with rosuvastatin are rare, but higher at the highest marketed dose (40 mg). Factors that may predispose patients to myopathy with HMG-CoA reductase inhibitors include advanced age (≥65 years), hypothyroidism, and renal insufficiency. Consequently: 1. Rosuvastatin should be prescribed with caution in patients with predisposing factors for myopathy, such as, renal impairment (see DOSAGE AND ADMINISTRATION), advanced age, and inadequately treated hypothyroidism. 2. Patients should be advised to promptly report unexplained muscle pain, tenderness, or weakness, particularly if accompanied by malaise or fever. Rosuvastatin therapy should be discontinued if markedly elevated CK levels occur or myopathy is diagnosed or suspected. 3. The 40 mg dose of rosuvastatin is reserved only for those patients who have not achieved their LDL-C goal utilizing the 20 mg dose of rosuvastatin once daily (see DOSAGE AND ADMINISTRATION). 4. The risk of myopathy during treatment with rosuvastatin may be increased with concurrent administration of other lipid-lowering therapies or cyclosporine, (see CLINICAL PHARMACOLOGY, Drug Interactions, PRECAUTIONS, Drug Interactions, and DOSAGE AND ADMINISTRATION). **The benefit of further alterations in lipid levels by the combined use of rosuvastatin with fibrates or niacin should be carefully weighed against the potential risks of this combination. Combination therapy with rosuvastatin and gemfibrozil should generally be avoided. (See DOSAGE AND ADMINISTRATION and PRECAUTIONS, Drug Interactions).** 5. **The risk of myopathy during treatment with rosuvastatin may be increased in circumstances which increase rosuvastatin drug levels (see CLINICAL PHARMACOLOGY, Special Populations, Race and Renal Insufficiency, and PRECAUTIONS, General).** 6. **Rosuvastatin therapy should also be temporarily withheld in any patient with an acute, serious condition suggestive of myopathy or predisposing to the development of renal failure secondary to rhabdomyolysis (e.g., sepsis, hypotension, dehydration, major surgery, trauma, severe metabolic, endocrine, and electrolyte disorders, or uncontrolled seizures).** **PRECAUTIONS General** Before instituting therapy with rosuvastatin, an attempt should be made to control hypercholesterolemia with appropriate diet and exercise, weight reduction in obese patients, and treatment of underlying medical problems (see INDICATIONS AND USAGE). Administration of rosuvastatin 20 mg to patients with severe renal impairment (CL_{cr} <30 mL/min/1.73 m^2) resulted in a 3-fold increase in plasma concentrations of rosuvastatin compared with healthy volunteers (see WARNINGS, Myopathy/Rhabdomyolysis and DOSAGE AND ADMINISTRATION). The result of a large pharmacokinetic study conducted in the US demonstrated an approximate 2-fold elevation in median exposure in Asian subjects (having either Filipino, Chinese, Japanese, Korean, Vietnamese or Asian-Indian origin) compared with a Caucasian control group. This increase should be considered when making rosuvastatin dosing decisions for Asian patients. (See WARNINGS, Myopathy/Rhabdomyolysis; CLINICAL PHARMACOLOGY, Special Populations, Race, and DOSAGE AND ADMINISTRATION.) **Information for Patients** Patients should be advised to report promptly unexplained muscle pain, tenderness, or weakness, particularly if accompanied by malaise or fever. When taking rosuvastatin with an aluminum and magnesium hydroxide combination antacid, the antacid should be taken at least 2 hours after rosuvastatin administration (see CLINICAL PHARMACOLOGY, Drug Interactions). **Laboratory Tests** In the rosuvastatin clinical trial program, dipstick-positive proteinuria and microscopic hematuria were observed among rosuvastatin-treated patients, predominantly in patients dosed above the recommended dose range (i.e., 80 mg). However, this finding was more frequent in patients taking rosuvastatin 40 mg, when compared to lower doses of rosuvastatin or comparator statins, though it was generally transient and was not associated with worsening renal function. Although the clinical significance of this finding is unknown, a dose reduction should be considered for patients on rosuvastatin 40 mg therapy with unexplained persistent proteinuria during routine urinalysis testing. **Drug Interactions Cyclosporine:** When rosuvastatin 10 mg was coadministered with cyclosporine in cardiac transplant patients, rosuvastatin mean C_{max} and mean AUC were increased 11-fold and 7-fold, respectively, compared with healthy volunteers. These increases are considered to be clinically significant and require special consideration in the dosing of rosuvastatin to patients taking concomitant cyclosporine (see WARNINGS, Myopathy/Rhabdomyolysis, and DOSAGE AND ADMINISTRATION). **Warfarin:** Coadministration of rosuvastatin to patients on stable warfarin therapy resulted in clinically significant rises in INR (>4, baseline 2-3). In patients taking coumarin anticoagulants and rosuvastatin concomitantly, INR should be determined before starting rosuvastatin and frequently enough during early therapy to ensure that no significant alteration of INR occurs. Once a stable INR time has been documented, INR can be monitored at the intervals usually recommended for patients on coumarin anticoagulants. If the dose of rosuvastatin is changed, the same procedure should be repeated. Rosuvastatin therapy has not been associated with bleeding or with changes in INR in patients not taking anticoagulants. **Gemfibrozil:** Coadministration of a single rosuvastatin dose to healthy volunteers on gemfibrozil (600 mg twice daily) resulted in a 2.2- and 1.9-fold, respectively, increase in mean C_{max} and mean AUC of rosuvastatin (see DOSAGE AND ADMINISTRATION). **Endocrine Function** Although clinical studies have shown that rosuvastatin alone does not reduce basal plasma cortisol concentration or impair adrenal reserve, caution should be exercised if any HMG-CoA reductase inhibitor or other agent used to lower cholesterol levels is administered concomitantly with drugs that may decrease the levels or activity of endogenous steroid hormones such as ketoconazole, spironolactone, and cimetidine. **CNS Toxicity** CNS vascular lesions, characterized by perivascular hemorrhages, edema, and mononuclear cell infiltration of perivascular spaces, have been observed in dogs treated with several other members of this drug class. A chemically similar drug in this class produced dose-dependent optic nerve degeneration (Wallerian degeneration of retinogeniculate fibers) in dogs, at a dose that produced plasma drug levels about 30 times higher than the mean drug level in humans taking the highest recommended dose. Edema, hemorrhage, and partial necrosis in the interstitium of the choroid plexus was observed in a female dog sacrificed moribund at day 24 at 90 mg/kg/day by oral gavage (systemic exposures 100 times the human exposure at 40 mg/day based on AUC comparisons). Corneal opacity was seen in dogs treated for 52 weeks at 6 mg/kg/day by oral gavage (systemic exposures 20 times the human exposure at 40 mg/day based on AUC comparisons). Cataracts were seen in dogs treated for 12 weeks by oral gavage at 30 mg/kg/day (systemic exposures 60 times the human exposure at 40 mg/day based on AUC comparisons). Retinal dysplasia and retinal loss were seen in dogs treated for 4 weeks by oral gavage at 90 mg/kg/day (systemic exposures 100 times the human exposure at 40 mg/day based on AUC). Doses ≤30 mg/kg/day (systemic exposures ≤60 times the human exposure at 40 mg/day based on AUC comparisons) following treatment up to one year, did not reveal retinal findings. **Carcinogenesis, Mutagenesis, Impairment of Fertility** In a 104-week carcinogenicity study in rats at dose levels of 2, 20, 60, or 80 mg/kg/day by oral gavage, the incidence of uterine stromal polyps was significantly increased in females at 80 mg/kg/day at systemic exposure 20 times the human exposure at 40 mg/day based on AUC. Increased incidence of polyps was not seen at lower doses. In a 107-week carcinogenicity study in mice given 10, 60, 200 mg/kg/day by oral gavage, an increased incidence of hepatocellular adenoma/carcinoma was observed at 200 mg/kg/day at systemic exposures 20 times human exposure at 40 mg/day based on AUC. An increased incidence of hepatocellular tumors was not seen at lower doses. Rosuvastatin was not mutagenic or clastogenic with or without metabolic activation in the Ames test with *Salmonella typhimurium* and *Escherichia coli*, the mouse lymphoma assay, and the chromosomal aberration assay in Chinese hamster lung cells. Rosuvastatin was negative in the *in vivo* mouse micronucleus test. In rat fertility studies with oral gavage doses of 5, 15, 50 mg/kg/day, males were treated for 9 weeks prior to and throughout mating and females were treated 2 weeks prior to mating and throughout mating until gestation day 7. No adverse effect on fertility was observed at 50 mg/kg/day (systemic exposures up to 10 times human exposure at 40 mg/day based on AUC comparisons). In testicles of dogs treated with rosuvastatin at 30 mg/kg/day for one month, spermatidic giant cells were seen. Spermatidic giant cells were observed in monkeys after 6-month treatment at 30 mg/kg/day in addition to vacuolation of seminiferous tubular epithelium. Exposures in the dog were 20 times and in the monkey 10 times human exposure at 40 mg/day based on body surface area comparisons. Similar findings have been seen with other drugs in this class. **Pregnancy** ***Pregnancy Category X*** See CONTRAINDICATIONS. Rosuvastatin may cause fetal harm when administered to a pregnant woman. Rosuvastatin is contraindicated in women who are or may become pregnant. Safety in pregnant women has not been established. There are no adequate and well-controlled studies of rosuvastatin in pregnant women. Rosuvastatin crosses the placenta and is found in fetal tissue and amniotic fluid at 3% and 20%, respectively, of the maternal plasma concentration following a single 25 mg/kg oral gavage dose on gestation day 16 in rats. A higher fetal tissue distribution (25% maternal plasma concentration) was observed in rabbits after a single oral gavage dose of 1 mg/kg on gestation day 18. If this drug is administered to a woman with reproductive potential, the patient should be apprised of the potential hazard to a fetus. In female rats given oral gavage doses of 5, 15, 50 mg/kg/day rosuvastatin before mating and continuing through day 7 postcoitus results in decreased fetal body weight (female pups) and delayed ossification at the high dose (systemic exposures 10 times human exposure at 40 mg/day based on AUC comparisons). In pregnant rats given oral gavage doses of 2, 20, 50 mg/kg/day from gestation day 7 through lactation day 21 (weaning), decreased pup survival occurred in groups given 50 mg/kg/day, systemic exposures ≥12 times human exposure at 40 mg/day based on body surface area comparisons. In pregnant rabbits given oral gavage doses of 0.3, 1, 3 mg/kg/day from gestation day 6 to lactation day 18 (weaning), exposures equivalent to human exposure at 40 mg/day based on body surface area comparisons, decreased fetal viability and maternal mortality was observed. Rosuvastatin was not teratogenic in rats at ≤25 mg/kg/day or in rabbits ≤3 mg/kg/day (systemic exposures equivalent to human exposure at 40 mg/day based on AUC or body surface comparison, respectively). **Nursing Mothers** It is not known whether rosuvastatin is excreted in human milk. Studies in lactating rats have demonstrated that rosuvastatin is secreted into breast milk at levels 3 times higher than that obtained in the plasma following oral gavage dosing. Because many drugs are excreted in human milk and because of the potential for serious adverse reactions in nursing infants from rosuvastatin, a decision should be made whether to discontinue nursing or administration of rosuvastatin taking into account the importance of the drug to the lactating woman. **Pediatric Use** The safety and effectiveness in pediatric patients have not been established. Treatment experience with rosuvastatin in a pediatric population is limited to 8 patients with homozygous FH. None of these patients was below 8 years of age. **Geriatric Use** Of the 10,275 patients in clinical studies with rosuvastatin, 3,159 (31%) were 65 years and older, and 698 (6.8%) were 75 years and older. The overall frequency of adverse events and types of adverse events were similar in patients above and below 65 years of age. (See WARNINGS, Myopathy/Rhabdomyolysis.) The efficacy of rosuvastatin in the geriatric population (≥65 years of age) was comparable to the efficacy observed in the non-elderly. **ADVERSE REACTIONS** Rosuvastatin is generally well tolerated. Adverse reactions have usually been mild and transient. In clinical studies of 10,275 patients, 3.7% were discontinued due to adverse experiences attributable to rosuvastatin. The most frequent adverse events thought to be related to rosuvastatin were myalgia, constipation, asthenia, abdominal pain, and nausea. **Clinical Adverse Experiences** Adverse experiences, regardless of causality assessment, reported in ≥2% of patients in placebo-controlled clinical studies of rosuvastatin are shown in Table 1; discontinuations due to adverse events in these studies of up to 12 weeks duration occurred in 3% of patients on rosuvastatin and 5% on placebo.

Table 1. Adverse Events in Placebo-Controlled Studies

Adverse event	Rosuvastatin N=744	Placebo N=382
Pharyngitis	9.0	7.6
Headache	5.5	5.0
Diarrhea	3.4	2.9
Dyspepsia	3.4	3.1
Nausea	3.4	3.1
Myalgia	2.8	1.3
Asthenia	2.7	2.6
Back pain	2.6	2.4
Flu syndrome	2.3	1.8
Urinary tract infection	2.3	1.6
Rhinitis	2.2	2.1
Sinusitis	2.0	1.8

In addition, the following adverse events were reported, regardless of causality assessment, in ≥1% of 10,275 patients treated with rosuvastatin in clinical studies. The events in *italics* occurred in ≥2% of these patients. **Body as a Whole:** *Abdominal pain, accidental injury, chest pain, infection, pain,* pelvic pain, and neck pain. **Cardiovascular System:** *Hypertension,* angina pectoris, vasodilatation, and palpitation. **Digestive System:** *Constipation, gastroenteritis,* vomiting, flatulence, periodontal abscess, and gastritis. **Endocrine:** Diabetes mellitus. **Hemic and Lymphatic System:** Anemia and ecchymosis. **Metabolic and Nutritional Disorders:** *Peripheral edema.* **Musculoskeletal System:** *Arthritis, arthralgia,* and pathological fracture. **Nervous System:** *Dizziness, insomnia, hypertonia, paresthesia, depression,* anxiety, vertigo, and neuralgia. **Respiratory System:** *Bronchitis, cough increased,* dyspnea, pneumonia, and asthma. **Skin and Appendages:** *Rash* and pruritus. **Laboratory Abnormalities:** In the rosuvastatin clinical trial program, dipstick-positive proteinuria and microscopic hematuria were observed among rosuvastatin-treated patients, predominantly in patients dosed above the recommended dose range (i.e., 80 mg). However, this finding was more frequent in patients taking rosuvastatin 40 mg, when compared to lower doses of rosuvastatin or comparator statins, though it was generally transient and was not associated with worsening renal function. (See PRECAUTIONS, Laboratory Tests.) Other abnormal laboratory values reported were elevated creatinine phosphokinase, transaminases, hyperglycemia, glutamyl transpeptidase, alkaline phosphatase, bilirubin, and thyroid function abnormalities. Other adverse events reported less frequently than 1% in the rosuvastatin clinical study program, regardless of causality assessment, included arrhythmia, hepatitis, hypersensitivity reactions (i.e., face edema, thrombocytopenia, leukopenia, vesiculobullous rash, urticaria, and angioedema), kidney failure, syncope, myasthenia, myositis, pancreatitis, photosensitivity reaction, myopathy, and rhabdomyolysis. **Postmarketing Experience** In addition to the events reported above, as with other drugs in this class, the following event has been reported during post-marketing experience with CRESTOR, regardless of causality assessment: very rare cases of jaundice. **OVERDOSAGE** There is no specific treatment in the event of overdose. In the event of overdose, the patient should be treated symptomatically and supportive measures instituted as required. Hemodialysis does not significantly enhance clearance of rosuvastatin. **DOSAGE AND ADMINISTRATION** The patient should be placed on a standard cholesterol-lowering diet before receiving CRESTOR and should continue on this diet during treatment. CRESTOR can be administered as a single dose at any time of day, with or without food. **Hypercholesterolemia (Heterozygous Familial and Nonfamilial) and Mixed Dyslipidemia (Fredrickson Type IIa and IIb)** The dose range for CRESTOR is 5 to 40 mg once daily. Therapy with CRESTOR should be individualized according to goal of therapy and response. The usual recommended starting dose of CRESTOR is 10 mg once daily. However, initiation of therapy with 5 mg once daily should be considered for patients requiring less aggressive LDL-C reductions, who have predisposing factors for myopathy, and as noted below for special populations such as patients taking cyclosporine, Asian patients, and patients with severe renal insufficiency (see CLINICAL PHARMACOLOGY, Race, and Renal Insufficiency, and Drug Interactions. For patients with marked hypercho-lesterolemia (LDL-C >190 mg/dL) and aggressive lipid targets, a 20-mg starting dose may be considered. After initiation and/or upon titration of CRESTOR, lipid levels should be analyzed within 2 to 4 weeks and dosage adjusted accordingly. **The 40-mg dose of CRESTOR is reserved only for those patients who have not achieved their LDL-C goal utilizing the 20 mg dose of CRESTOR once daily (see WARNINGS, Myopathy/ Rhabdomyolysis). When initiating statin therapy or switching from another statin therapy, the appropriate CRESTOR starting dose should first be utilized, and only then titrated according to the patient's individualized goal of therapy.** **Homozygous Familial Hypercholesterolemia** The recommended starting dose of CRESTOR is 20 mg once daily in patients with homozygous FH. The maximum recommended daily dose is 40 mg. CRESTOR should be used in these patients as an adjunct to other lipid-lowering treatments (e.g., LDL apheresis) or if such treatments are unavailable. Response to therapy should be estimated from pre-apheresis LDL-C levels. **Dosage in Asian Patients** Initiation of CRESTOR therapy with 5 mg once daily should be considered for Asian patients. The potential for increased systemic exposures relative to Caucasians is relevant when considering escalation of dose in cases where hypercholesterolemia is not adequately controlled at doses of 5, 10, or 20 mg once daily. (See WARNINGS, Myopathy/ Rhabdomyolysis, CLINICAL PHARMACOLOGY, Special Populations, Race, and PRECAUTIONS, General). **Dosage in Patients Taking Cyclosporine** In patients taking cyclosporine, therapy should be limited to CRESTOR 5 mg once daily (see WARNINGS, Myopathy/Rhabdomyolysis, and PRECAUTIONS, Drug Interactions). **Concomitant Lipid-Lowering Therapy** The effect of CRESTOR on LDL-C and total-C may be enhanced when used in combination with a bile acid binding resin. If CRESTOR is used in combination with gemfibrozil, the dose of CRESTOR should be limited to 10 mg once daily (see WARNINGS, Myopathy/Rhabdomyolysis, and PRECAUTIONS, Drug Interactions). **Dosage in Patients With Renal Insufficiency** No modification of dosage is necessary for patients with mild to moderate renal insufficiency. For patients with severe renal impairment (CL_{cr} <30 mL/min/1.73 m^2) not on hemodialysis, dosing of CRESTOR should be started at 5 mg once daily and not to exceed 10 mg once daily (see PRECAUTIONS, General, and CLINICAL PHARMACOLOGY, Special Populations, Renal Insufficiency).

CRESTOR®
rosuvastatin calcium

NOTE: This summary provides important information about CRESTOR. For more information, please ask your doctor or health care professional about the full Prescribing Information and discuss it with them.

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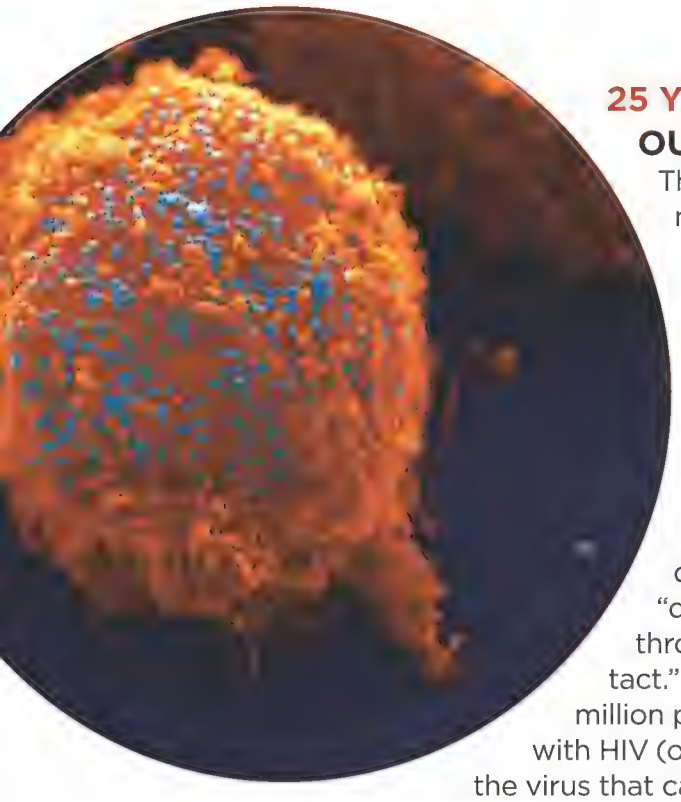


25 YEARS AGO

OUTBREAK

The first report of a new disease, later called AIDS, is published June 5, 1981. Five young men in Los Angeles are infected with a lethal pneumonia; their case histories suggest a "cellular-immune dysfunction" and a "disease acquired through sexual contact." In 2005, over 40 million people are infected with HIV (on a blood cell, left), the virus that causes AIDS.

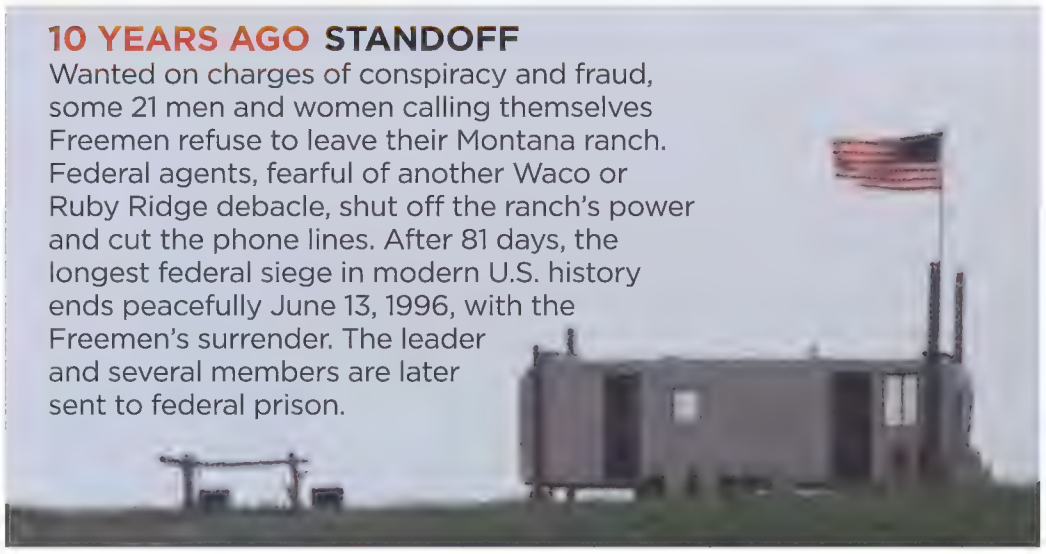
100 YEARS AGO

BLACK VENUS

Josephine Baker is born June 3, 1906, in St. Louis, Missouri. Baker arrives in Paris in 1925, where admirers such as Ernest Hemingway see the "Black Venus" perform her risqué dances. In 1975, Baker, by then a French cultural icon, dies from a cerebral hemorrhage at 68.

10 YEARS AGO STANDOFF

Wanted on charges of conspiracy and fraud, some 21 men and women calling themselves Freemen refuse to leave their Montana ranch. Federal agents, fearful of another Waco or Ruby Ridge debacle, shut off the ranch's power and cut the phone lines. After 81 days, the longest federal siege in modern U.S. history ends peacefully June 13, 1996, with the Freemen's surrender. The leader and several members are later sent to federal prison.



130 YEARS AGO

TAKE US PRISONERS!

In 1876, the U.S. Army plans a campaign against a group of Sioux and Cheyenne Indians who have ignored a government order to go to a South Dakota reservation. Lt. Col. George A. Custer and his men attack the village of the defiant lot in Montana on June 25, but are soon overwhelmed. Although soldiers plead to the Indians to "take us prisoners," Custer and some 263 cavalrymen are killed in the Battle of Little Bighorn; the Indians suffer a loss of at least 60.

50 YEARS AGO

BEAUTY AND THE BRAIN

Actress Marilyn Monroe marries playwright Arthur Miller June 29, 1956. Asked what his wife will do when she isn't making movies, Miller replies, "She will be my wife. That's a full-time job." But not a permanent one. The two divorce in January 1961, a year before Monroe dies from a drug overdose at 36.

105 YEARS AGO

BRILLIANT DEBUT

In 1901, art critic Félicien Fagus writes of the June debut at a Paris gallery of a "brilliant newcomer" by the name of Pablo Picasso, 19, despite the young Spaniard's failure "to forge a personal style." The exhibition is a financial success for Picasso, whose works include *Self Portrait: Yo Picasso*, above.

{ BY CHAI WOODHAM }

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Smithsonian
{ JUNE 2006 · VOLUME 37, NUMBER 3 }

Humans have roamed the Grand Canyon for more than 8,000 years. But the chasm is only slowly yielding clues to the ancient peoples who lived

below the rim

BY DAVID ROBERTS PHOTOGRAPHS BY BILL HATCHER

Modern-day climbers who descend the canyon (such as the author, in blue, and mountaineer Greg Child, on the South Rim) may be stymied by what seems like a dead end, only to find footholds carved by prehistoric residents.

At first blush, the Grand Canyon looks like a perfect place for ancient peoples to have occupied, for the Colorado River is the most abundant source of water in the Southwest.

"It's really a marginal environment," says a National Park Service archaeologist of the canyon. While the Colorado River (seen from the North Rim) would have provided ancient peoples with water, it also unleashed recurrent floods. And moving within the canyon involved both effort and risk. (Greg Child, right, explores a modern trail near the Supai village.)

It was early May, but a raw breeze was blowing as we tracked bootprints through an inch of new-fallen snow. Shortly after dawn, we had parked on the Desert View Drive and set off through the ponderosa forest toward the Grand Canyon, leaving behind the tourist traffic hurtling along the canyon's South Rim.

After hiking a mile, the three of us—mountaineer Greg Child, photographer Bill Hatcher and I—emerged abruptly from the trees to stand on a limestone promontory overlooking the colossal chasm. The view was predictably sublime—distant ridges and towers blurred to pastel silhouettes by the morning haze; the North Rim, 20 miles distant, smothered in storm; the turgid flood of the Colorado River silenced by the 4,800-foot void beneath our feet.

But we hadn't come for the scenery.

We scrambled off the point, slithering among boulders as we lost altitude. A few hundred feet below the rim we were stopped by a band of rock that dropped nearly ten feet. We tied a rope to a clump of serviceberry bushes and slid down it, leaving the rope in place for our return.

We had found our way through the canyon's Kaibab Limestone cap rock and alighted atop a 400-foot precipice of Coconino Sandstone. For miles on either side, this band of grayish orange rock was too sheer to descend, but the prow itself was broken into sharp-angled steps. We took the line of least resistance, sidling around towers and straddling grooves, with the emptiness below our soles reminding us of the consequences of a misstep.

Then the going got really tricky. We faced inward, moving slowly from one handhold and foothold to the next. All three of us are experienced climbers, but the terrain was as difficult as any of us dared tackle without ropes and hardware. Just as the "route" threatened to blank out, Greg, in the lead, placed his foot in a rounded hollow that gave him just enough purchase to keep his balance. Another hollow for his other foot—six in a row, all told. From years of prowling through the Southwest, we knew that these subtle depressions were man-made. More than seven centuries ago, some daring acrobat had pounded them with a rock harder than sandstone.

So it went for the next 90 minutes: wherever the path seemed to vanish, early pioneers had stacked a platform of flat rocks here or carved a few footholds there. At last we came out onto a broad saddle between the plunging prow

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DAVID ROBERTS, *a longtime contributor to the magazine, has a passion for the Southwest. Colorado-based photographer* **BILL HATCHER** *makes his* SMITHSONIAN *debut with this feature.*

Since 1933, more than 500 split-twig figurines, all made the same way, have been found within the canyon. One theory has it that they were made by a single shamanistic clan that lasted 60 generations.

and an isolated butte to the north. As we sat eating lunch, we found red and gray and white flakes of chert scattered in the dirt—the debris of an arrowhead-making workshop.

Bill looked up at the route we had just descended. Had we stumbled upon it from below, we might well have judged it unclimbable. "Pretty amazing, huh?" was all he could say. But what was the trail for, and what long-vanished culture had created it?

THE GRAND CANYON occupies such an outsize place in the public imagination, we can be forgiven for thinking we "know" it. More than four million tourists visit the canyon each year, and the National Park Service funnels the vast majority of them through a tidy gantlet of attractions confined to a relatively short stretch of the South Rim. Even people who have never visited America's greatest natural wonder have seen so many photographs of the panorama from Grandview Point or Mather Point that the place seems familiar to them.

But the canyon is a wild and unknowable place—both vast (the national park alone covers about 1,902 square miles, about the size of Delaware) and inaccessible (the vertical drops vary from 3,000 feet to more than 6,000). The chasm lays bare no fewer than 15 geological layers, ranging from the rim-top Kaibab Limestone (250 million years old) to the river-bottom Vishnu Schist (as old as two billion years). The most ecologically diverse national park in the United States, the Grand Canyon embraces so many microclimates that hikers can posthole through snowdrifts on the North Rim while river runners on the Colorado below are sunbathing in their shorts.

Among the canyon's many enigmas, one of the most profound is its prehistory—who lived here, and when, and how, and why. At first blush, the Grand Canyon looks like a perfect place for ancient peoples to have occupied, for the Colorado River is the most abundant and reliable source of water in the Southwest. Yet before the river was dammed, it unleashed recurring catastrophes as it flooded its banks and scoured out the alluvial benches where ancients might have been tempted to dwell and farm. For all its size and geological variety, the canyon is deficient in the kinds of natural alcoves in which prehistoric settlers were inclined to build their villages. And—as Bill, Greg and I discovered that May morning—it can be fiendishly difficult to navigate. "The canyon's got a lot to offer, but you have to work hard for it," says National Park Service archaeologist Janet Balsom. "It's really a marginal environment."

And yet the Grand Canyon is riddled with prehistoric trails, most of which lead from the rim down to the riverbed. Some of them are obvious, such as the routes improved by the park service into such hikers' boulevards as the Bright Angel and South Kaibab trails. Most of the others are obscure. Archaeologists have largely left them to be explored by a few fanatically devoted climbers.

The archaeology of other

Southwestern regions—New Mexico's Chaco Canyon, for instance, or Colorado's Mesa Verde—has yielded a far more comprehensive picture of what it was like a millennium or so ago. Says Balsom: "You have to remember, only 3.3 percent of the Grand Canyon has been surveyed, let alone excavated." Only in the past 50 years have archaeologists focused significant attention on the Grand Canyon—sometimes digging in places so remote they had to have helicopter support—and only recently have their efforts borne much fruit.

Broadly speaking, archaeological evidence shows that humans have roamed the canyon for more than 8,000 years. The dimmest hint of a Paleo-Indian presence, before 6500 B.C., is succeeded by rock art and artifacts from a vivid but mysterious florescence of Archaic hunter-gatherers (6500 to 1250 B.C.). With the discovery of how to cultivate corn, bands of former nomads started building semipermanent villages on canyon terraces sometime before 1000 B.C. Two millennia later, by A.D. 1000, at least three distinct peoples flourished within the canyon, but their identities and ways of living remain poorly understood. From A.D. 1150 to 1400, there may have been a hiatus during which the entire canyon was abandoned—why, we can only guess.

Today, just one group of Native Americans—the Havasupai—lives within the canyon. And even though their elders can recite origin stories with unblinking self-assurance, the tribe presents anthropologists with puzzles every bit as vexing as the ones that cling to the vanished ancients.

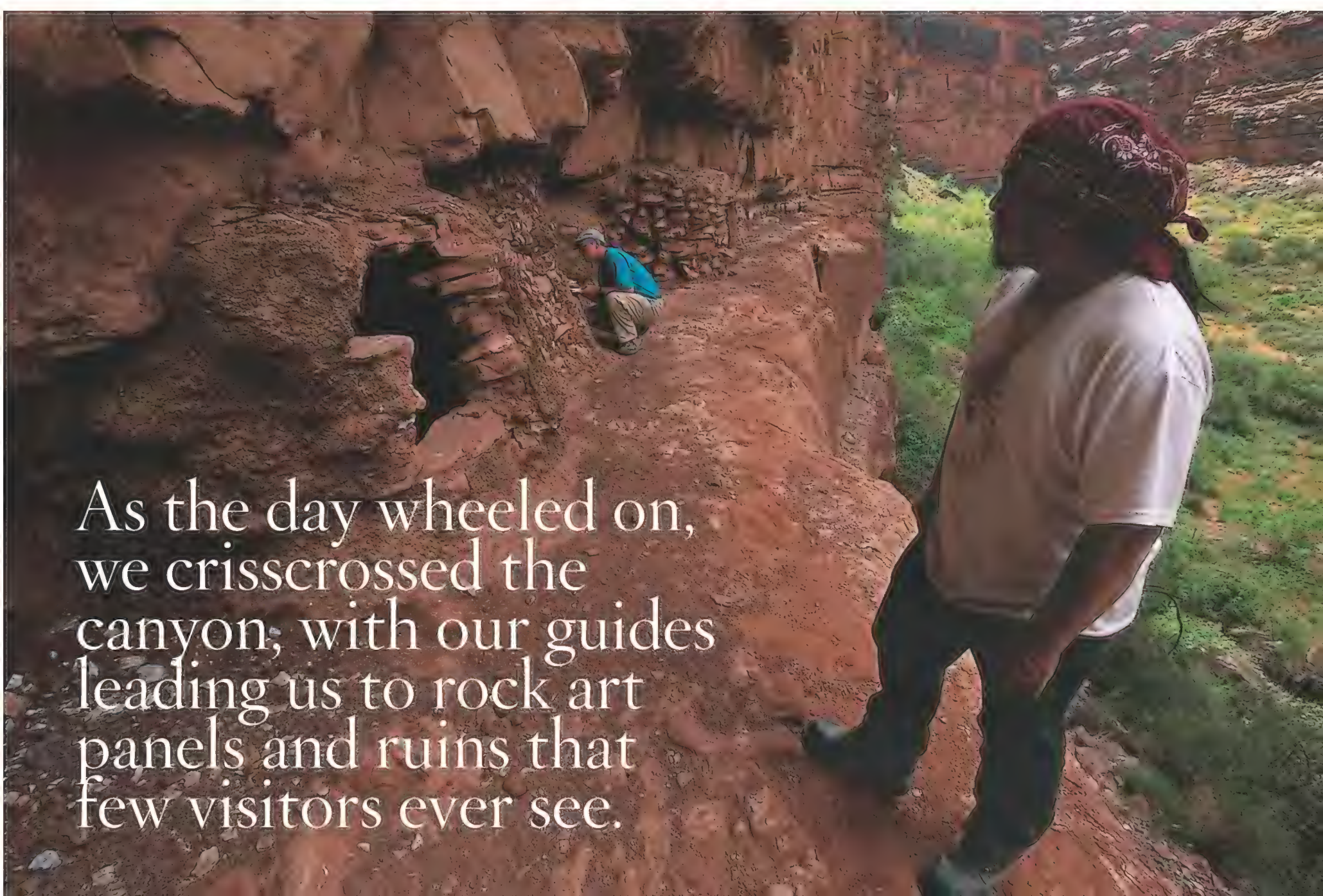
The blank spaces in the timeline, the lost connections between one people and another, confound experts who only slowly are illuminating the lives that were lived so long ago below the rim.

THE GRAND CANYON has frustrated Western explorers from the beginning. The first Europeans to behold it were a splinter party from Francisco Vásquez de Coronado's monumental Southwest *entrada* of 1540-42. Their commander dispatched them to chase down a rumor about "a large river" to the west. "Several days down the river," some Hopi informants had told them, "there were people with very large bodies."

Guided by four Hopi men, this party, headed by one García López de Cárdenas, took 20 days to reach the Grand Canyon—at least twice as long as it should have. Apparently, the Hopi were leading Cárdenas' men the long way around to divert them from their own vulnerable villages.

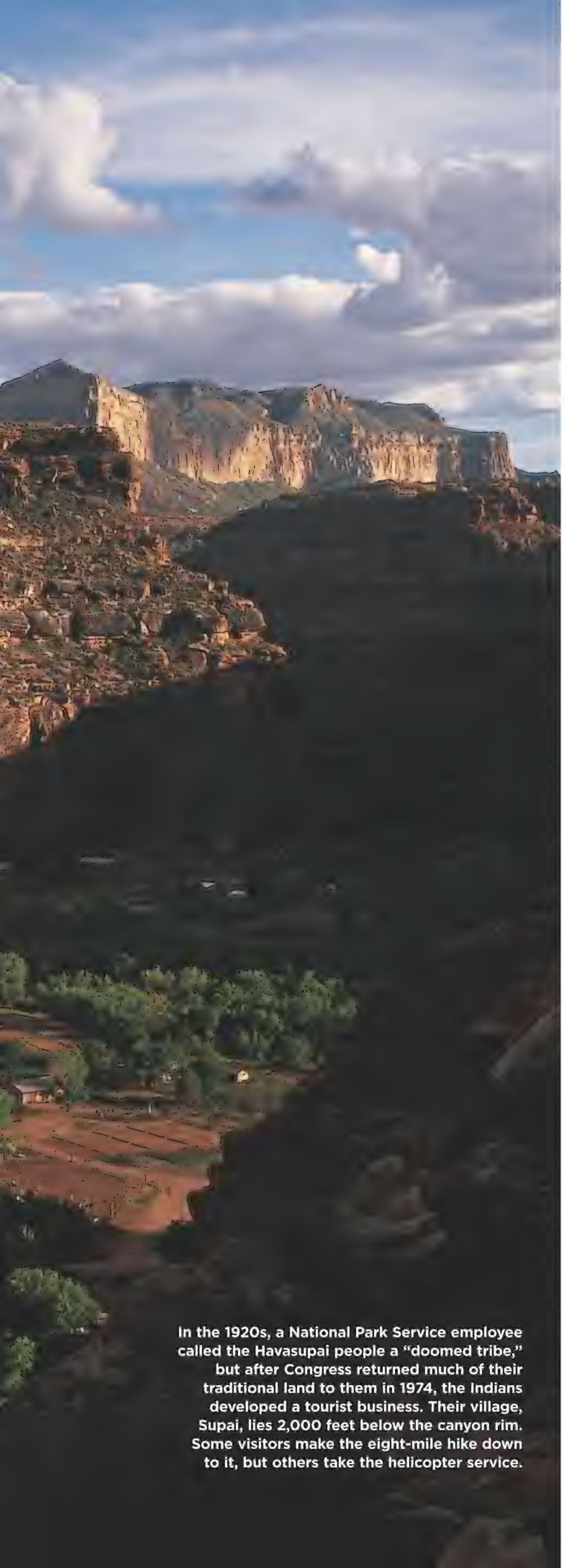
Cárdenas' guides took the soldiers to a point on the South Rim not far from where the three of us slid off the precipice that morning in May 2005, choosing one of the few stretches where no trail led into the canyon. Misjudg-

Visitors may hike out from the village of Supai to see cliffside art, granaries or dwellings, but only if they hire a guide (the author, in blue, with guide Damon Watahomigie). The villagers use a paste made of hematite (opposite) as a snake repellent.



As the day wheeled on, we crisscrossed the canyon, with our guides leading us to rock art panels and ruins that few visitors ever see.

As an old trail plunges through four geologic layers, the reddish sandstone walls broaden to accommodate the ancient village of Supai in one of the most idyllic natural oases in the American West.



In the 1920s, a National Park Service employee called the Havasupai people a "doomed tribe," but after Congress returned much of their traditional land to them in 1974, the Indians developed a tourist business. Their village, Supai, lies 2,000 feet below the canyon rim. Some visitors make the eight-mile hike down to it, but others take the helicopter service.

ing the scale of the gorge, the Spaniards thought the river below a mere six feet wide, instead of more than a hundred yards. Cárdenas sent his three nimblest scramblers over the edge to find a way down, but after three days—during which they got only a third of the way—they returned to report that the descent was impossible. Cárdenas, who was hoping to find an easy route to the Pacific, turned back in exasperation.

The first U.S. explorer to reach the Colorado River within the Grand Canyon was a government surveyor, Lt. Joseph C. Ives, who did it with guidance from Hualapai Indians in 1858. He was no more pleased than Cárdenas. The entire region, he swore in his official report, was "altogether valueless." That judgment did not prevent John Wesley Powell from boating down the Colorado River in 1869, nor a wave of miners from invading the canyon in the 1880s, nor the establishment of the Grand Canyon National Monument in 1908 and National Park in 1919.

In 1933, three Civilian Conservation Corps workers building a trail in the canyon took an off day to explore a remote cave. As they were hunting for Indian objects inside it, they later told their boss, they discovered three figurines, each made from a single willow twig. It seemed that the objects, each less than a foot in height, had been secreted away in one of the most inaccessible niches.

Since then, more than 500 such figurines have been discovered. On a windy, rainy day, Bill, Greg and I stopped by the Grand Canyon National Park Museum Collection, where curator Colleen Hyde pulled about a dozen of these split-twig figurines out of their storage drawers.

They ranged in length from an inch to 11 inches, but all had been made by the same method. Each artist had taken a stick of willow or skunkbush and split it lengthwise until it was held together only at one end, then folded the two ends around each other until the second could be tucked inside a wrapping formed by the first. The result appears to be an effigy of either a deer or a bighorn sheep, both of which would have been an important source of food.

In recent years, many of the figurines have been carbon-dated, yielding dates ranging from 2900 to 1250 B.C.—squarely in the late Archaic period of this region. Except for a pair of broken projectile points, they are the oldest artifacts ever found in the Grand Canyon. The Archaic hunter-gatherers—people who had yet to discover corn or pottery or the bow and arrow—held to this rigorous artistic tradition for nearly 17 centuries, or about as long as the span from late Roman statuary to Jackson Pollock.

Across the Southwest, only two areas are known to have produced split-twig figurines. A cluster centered in canyons in southeastern Utah consists of effigies wrapped according to a different method, producing a different-looking animal, and they are found only in domestic contexts, including trash dumps. But all of the Grand Canyon figurines have been discovered in deep caves in the Redwall Limestone stratum—by far the most difficult geolog-

Rex Tilousi, former Havasupai tribal chairman, acknowledges that his people are reluctant to interpret canyon rock art for archaeologists. "We don't know what you want to do with that knowledge," he says.

"Our ancestors lie there," Tilousi told us. "Then the government said, 'You can't do that anymore.'"

ic layer in the canyon to climb through, because its sheer precipices lack handholds and footholds. In these caves, the objects were placed under flat rocks or small cairns, and no accompanying relics have ever been found. There is no evidence that Archaic people ever lived in these caves, and some of the caves are so difficult to get into that modern climbers would have to use ropes and hardware to do it. (Because there must be dozens, or even hundreds, of figurines yet to be discovered, the park service forbids exploration of the caves in the Redwall band, should anyone be bold enough to try.)

And yet no one knows why the figurines were made, although some kind of hunting magic has long been the leading hypothesis. Among those we saw in the museum collection were several that had separate twigs stuck into the bodies of the sheep or deer, like a spear or dart.

In a 2004 paper, Utah archaeologists Nancy J. Coulam and Alan R. Schroedl cite ethnographic parallels among such living hunter-gatherers as Australian Aborigines to argue that the figurines were fetishes used in a ritual of "increase magic," and that they were the work not of individualistic shamans, but of a single clan, lasting 60 generations, that adopted the bighorn sheep as its totem. These hunters may have believed that the Grand Canyon was the place of origin of all bighorn sheep; by placing the figurines deep inside caves, under piles of rocks, they might have sought to guarantee the continued abundance of their prey. That the caves sometimes required very dangerous climbing to enter only magnified the magic.

Coulam and Schroedl's theory is both bold and plausible, yet so little is known about the daily lives of the Archaic people in the Grand Canyon that we cannot imagine a way to test it. The figurines speak to us from a time before history, but only to pose a riddle.

THE RIDDLES of the Grand Canyon are not confined to prehistoric times, either, as a trip among the present-day Havasupai makes clear. They live 2,000 vertical feet below the rim, on Havasu Creek. As an old trail plunges through four geologic layers, the reddish sandstone walls broaden to accommodate the ancient village of Supai in one of the most idyllic natural oases in the American West. A few miles upstream, one of the Grand Canyon's most powerful springs sends a torrent of crystalline blue-green water down the ravine. (The people here call themselves *Ha vasúa baaja*, or "people of the blue-green water.") The calcium carbonate that gives the creek its color renders it undrinkable, but the Havasupai draw their water from an abundance of other springs and seeps on the edges of their village.

By the time of their first contact with Europeans, as it happens in 1776, the Havasupai had long since adjusted to a seasonal round that defies logic but seems to have

worked superbly for them. In spring, summer and early autumn they lived in the canyon, planting and harvesting. Then they moved back to the rim, where, at an altitude of more than 6,000 feet, they camped in the snow and spent the winter hunting and gathering.

With the coming of Anglo-Americans, that cycle of life changed. In 1882, after miners began gouging holes in the cliff walls in their quest for silver, lead and gold, the U.S. government restricted the Havasupai to the 518 acres of their village. From then on, they could no longer hunt or gather on the South Rim. Other Havasupai families lived in mid-canyon glades, such as Indian Gardens, the halfway point on today's Bright Angel Trail. Gradually, however, they were nudged out by encroaching tourism.

As late as the 1920s, a park service employee called the Havasupai a "doomed tribe" amounting to "less than two hundred wretched weaklings." But today, the Havasupai number some 650 men, women and children. And in 1974, Congress returned much of the people's traditional land to them, in the largest restoration ever bestowed on a Native American tribe. The Havasupai Reservation today covers more than 185,000 acres, where, ironically, the tourists have become guests of the people of the blue-green water.

A number of those tourists come by helicopter; most hike in to Supai with light daypacks while Native wranglers bring their duffels on horseback or muleback. The chief draw for most visitors, however, is not the village, with its cornfields and pastures full of sleek horses, but three spectacular waterfalls downstream.

The Havasupai people took their name from Havasu Falls (*Ha vasúa baaja* means "people of the blue-green water"), but scientists do not know how long they've lived in the canyon.

Bill, Greg and I backpacked the eight miles and 2,000 feet down into Supai, looking less for the Spring Break atmosphere of high tourist season than for a chance to plumb the past. On our second day, Rex Tilousi, who was then the tribal chairman, held our nosy questions at arm's length for an hour or so, but then relented and took us on an amble through his boyhood neighborhood.

With his flowing silver hair, Colonel Sanders goatee and weather-beaten visage, Tilousi cut a striking figure. And his monologue blended sly satire with ancestral grievances. Referring to the miners, Tilousi recalled, "Here came the hairy man from the East, looking for the shining rock, wanting to get rich." And then, more solemnly, "If it had been up to us, we never would have let the miners come down here."

The tourist campground, built by the park service before 1974, lies "right on top of where we used to cremate our people," Tilousi told us. "It disturbs me sometimes to see that campground, but we need income from the tourists." He stroked his goatee and said, "Our ancestors lie there. Then the government said, 'You can't do that anymore.' So now we have to bury our dead, just like everybody else."

We paused beside a giant cottonwood as Tilousi pointed to a high cliff to the west. "See those two white marks up there?" Through binoculars I discerned a pair of white alkaline streaks made by seeping water in the ruddy cliff, seemingly inaccessible below the distant rim. "Those are two ears of corn, placed there by the Creator," Tilousi said. "We pray to them, asking for plenty."

The Havasupais' welcome mat is something of a facade, Tilousi admitted. Archaeologists had asked Havasupai to interpret the "rock writings"—had even, he insisted, taken chisels to certain petroglyph panels—but the people had objected. "We feel we should never tell anyone besides ourselves" what the rock art means, he said. "We don't know what you want to do with that knowledge."

Visitors without guides are forbidden to explore the canyon beyond the main trail that leads down to the waterfalls, so the next day we hired two Havasupai in their mid-30s. Genial-faced Benjy Jones had the build of a sumo wrestler; Damon Watahomigie had less girth, a sharper mien and a fund of lore. We had hiked only 15 minutes when he stopped and pointed out a knob of rock far above us on the western rim. "See the frog?" he asked. The knob indeed looked like a frog preparing to jump.

"The story is that the people were living at Wi-ka-sala—Beaver Canyon, on your maps—when all the waters receded," Watahomigie said. "Everything was dying because of the new age. We weren't people then; we were animals and insects. The chief sent out the frog to find a place where we could begin again. The frog hopped all over, until he finally found this place. He could hear the Colorado River."

We craned our necks, staring at the distant rock formation. "It was like Noah sending out the dove," Watahomigie concluded.

Looking for rock art, we headed off the trail and up a steep slope choked with brush and cactus. Jones produced a leaf cradling an oily, dark red paste made from hematite, or iron oxide, a clay that Native Americans often used as a paint. One of the Havasupais' most treasured substances, hematite from the canyon has been found east of the Mississippi River, traded prehistorically over more than a thousand miles.

Jones dipped his finger in the paste, then dabbed a streak on each of our boot soles. "Keeps the rattlesnakes away," he explained.

As the day wheeled on, we crisscrossed the canyon, with our guides leading us to rock art panels and ruins that few

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The Shamans' Gallery (above), a rock art panel that stretches across 60 feet of sandstone in a side canyon, displays an array of humanlike figures. One expert dates it to 1000 B.C. and believes it embodies the visions of unknown religious seers.

visitors ever see. There were several our guides wouldn't let us visit. "The ones that are closed, we aren't supposed to bother them," Watahomigie said. By "closed," I assumed he meant having stone-slab doors intact.

His caution implies that the cliff buildings were the work of an earlier people. Archaeologists have debated Havasupai origins for half a century, strenuously and inconclusively. Some insist that a people called the Cohonina became the Havasupai. Others argue that the Havasupai, along with their linguistic cousins the Hualapai and Yavapai, are what they call Cerbat peoples, fairly recent migrants from the Great Basin of Nevada after A.D. 1350.

Like many other Native American peoples, the Havasupai usually say they have lived forever in the place they inhabit. But when we asked Tilousi how long his people had lived in the canyon of the blue-green water, he did not go quite that far. "I wasn't here billions of years ago," he said. "I can't put numbers to the years that have gone by. I will just say, since the beginning of the ice age."

ON OUR LAST DAY in the Grand Canyon, Bill, Greg and I made a pilgrimage to a shrine deep in a little-traveled side valley that, like the Redwall caves guarding the split-twig figurines, had in all likelihood been an Archaic place of power.

As we wound down a faint trail across an increasingly barren landscape, I saw nothing that even hinted at a prehistoric presence—not a single potsherd or chert flake in the dirt, not the faintest scratchings on a wayside boulder. But when we entered a small gorge in the Supai Sandstone stratum, a deep orange cliff loomed on our left about 50 feet above the dry creekbed. Halfway up, a broad ledge gave access to a wall that severely overhung above it. We scrambled up to the ledge.

During the previous 20 years, I had found hundreds of rock art panels in backcountry all over the Southwest. I knew the hallmarks of the styles by which experts have categorized them—Glen Canyon Linear, Chihuahuan Polychrome, San Juan Anthropomorphic and the like. But the Shamans' Gallery, as this rock art panel has been named, fit none of those taxonomic pigeonholes.

It was perhaps the most richly and subtly detailed panel I'd ever seen. Across some 60 feet of arching sandstone, vivid back-to-back figures were rendered in several colors, including two shades of red. Most of the figures were anthropomorphic, or human-shaped, and the largest was six feet tall.

Polly Schaafsma, a leading expert on Southwestern rock art, has argued that the Shamans' Gallery (which she named) was painted before 1000 B.C., based on the style of the figures. She feels that it embodies the visionary trances of religious seers—shamans. The rock shelter where the artists recorded their visions, she believes, must have been a sacred site. Had these ancient artists been part of the troupe (or clan) that had climbed into the Redwall caves to hide split-twig figurines? We have no way of knowing and no foreseeable way of finding out.

But no matter. After two hours on the ledge, I stopped filling my notebook and simply stared. I tried to rid my mind of its Western, analytic itch to figure out what the paintings "meant" and surrendered to their eerie glory. In the presence of the Shamans' Gallery, ignorance led to an unexpected kind of bliss.

John Wilkes Booth, cornered in a Virginia barn, wanted to go down fighting: "I have too great a soul to die like a criminal" **BY JAMES L. SWANSON**

AN ASSASSIN'S FINAL HOURS

For his 10th birthday, James L. Swanson (left) was given a framed engraving of the pistol that John Wilkes Booth used to kill Abraham Lincoln. (The boy and the 16th president share a birthday, February 12.) Accompanying the engraving was a clipping from the *Chicago Tribune* of April 15, 1865, the morning Lincoln died. The clipping ended in midsentence, as a man pursuing Booth out of Ford's Theatre "reached the back door."

"I remember reading it over and over again," says Swanson, 47, "and seeing that sentence and just wanting to know what happened next."

What happened is that Swanson himself completed the sentence, in *Manhunt: The 12-Day Chase for Lincoln's Killer*, a minute-by-minute reconstruction of the crime and its aftermath. The book, which was published in February by William Morrow and quickly became a bestseller, is drawn from firsthand accounts by participants in the hunt for Booth and other documents.

"In a way, we have to thank Edwin Stanton," Swanson says. Lincoln's secretary of war offered $100,000 for the capture of Booth and some of his co-conspirators. Afterward, those involved in tracking Booth down committed their experiences to writing in the hope of claiming a share of the reward (ultimately, many men did). Swanson also credits the actor's megalomania: "He wanted to stage a grand final performance." On their 11th day on the run, Booth and David Herold were at the Garrett farm in Virginia, under false names. Their hosts let them sleep in a tobacco barn—but, suspecting they might steal horses, had surreptitiously locked the barn door behind them.

The dogs heard it first.

Rising from the southwest. Distant sounds, yet inaudible to human ears, of metal touching metal; of a hundred hoofs sending vibrations through the earth; of labored breathing from tired horses; of faint human voices. These early warning signs alerted the dogs sleeping under the Garretts' front porch. At the farm, John Garrett, corn-house sentinel, was already awake and the first to hear their approach. William Garrett, lying on a blanket a few feet from his brother, heard them too.

It was after midnight, and dark and still inside the farmhouse. Old Richard Garrett and the rest of his family had gone to bed hours ago.

All was quiet, too, in the tobacco barn, where John Wilkes Booth and David Herold, another conspirator in the plot to kill Abraham Lincoln, were sleeping. The barking dogs and the clanking, rumbling sound finally woke Booth. Recognizing the unique music of cavalry on the move, the assassin knew he had only a minute or two to react.

Booth woke Herold. They snatched up their weapons and rushed to the front of the barn. "We went right up to the barn door and tried to get out," Herold would recall,

After the shooting at Ford's Theatre, sentiments ran high, both for the slain president (in a posthumous portrait, above) and against the actor who had killed him (on whose likeness, right, a War Department telegraph operator wrote out his thoughts).

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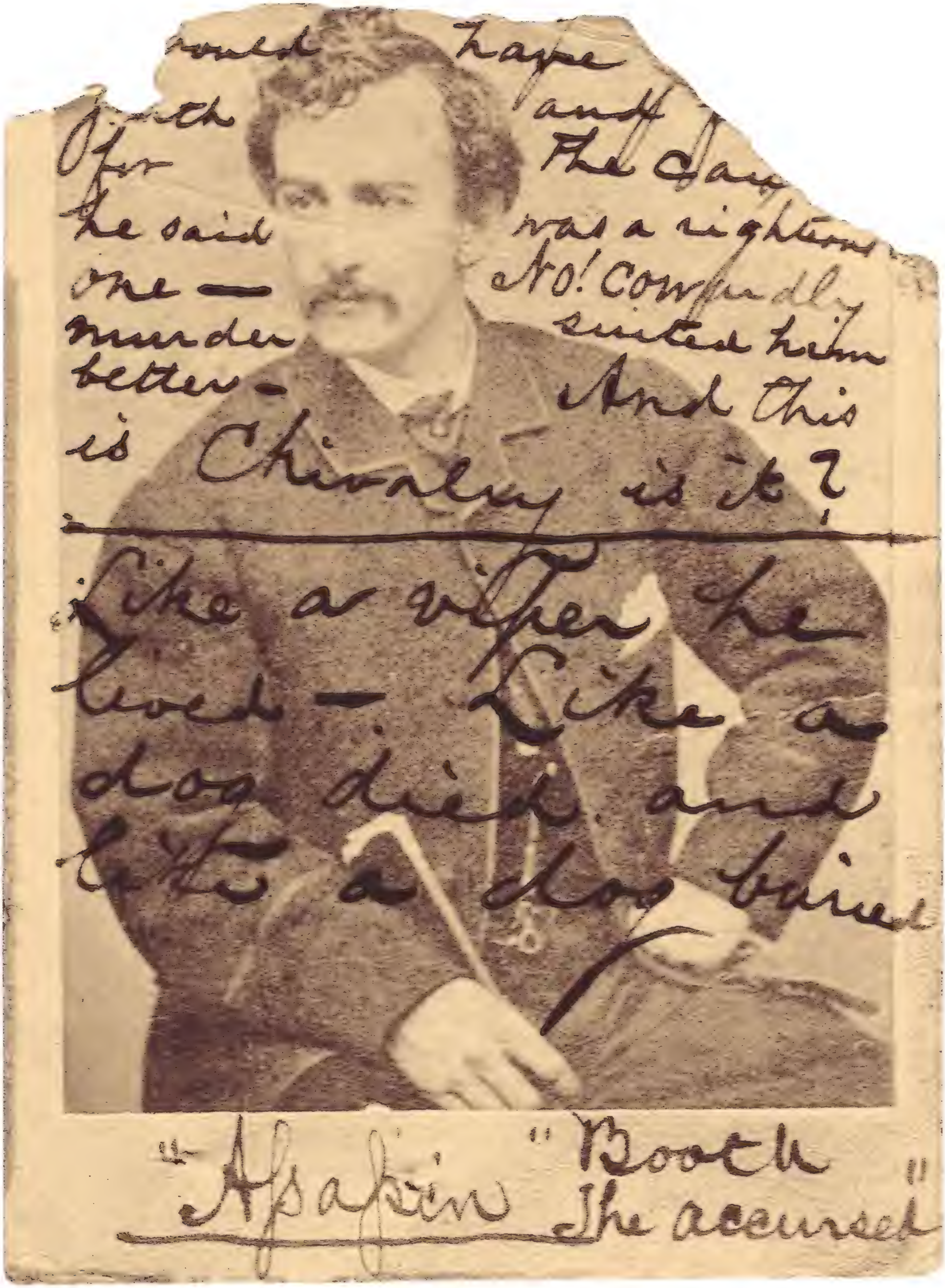
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"but found it was locked." The Garretts had imprisoned them! Booth wasted no time trying to pry the lock from its mountings. They had to flee the barn before Union troops surrounded it.

Booth wheeled 180 degrees. "Come on!," he called to Herold and limped 50 feet to the back wall. "[W]e went directly to the back end of the barn, and we tried to kick a board off so we could crawl out," Herold would say. Booth, who had fractured his left leg a couple of inches above the ankle when he jumped to the stage after shooting the president, could not leverage his full weight on his left foot to kick with the right. The board did not give. Herold fared no better.

The Union column raced up the road and threw a cordon around the farmhouse. Lt. Edward Doherty of the 16th New York Cavalry and detectives Luther Baker and Everton Conger dropped from their saddles, leapt up the porch and pounded on the door. Richard Garrett walked downstairs in his nightclothes.

David Herold panicked: "You had better give up," he urged Booth. No, the actor declared, "I will suffer death first."

Doherty, Baker and Conger pounced as soon as old man Garrett opened the door. Conger barked first: "Where are the two men who stopped here at your house?"

Startled, Richard Garrett replied: "They have gone."

"Gone where?," Conger demanded.

"Gone to the woods," said Garrett.

"What!" Baker interrupted. "A lame man gone into the woods?" Well, he had crutches, Garrett pointed out.

"Will you show me where they are?," Baker continued.

"I will," Garrett promised, "but I will want my pants and boots."

Garrett's interrogators refused to let him back into the house to dress, so his family passed his clothes to him through the door.

Conger decided to play the old man's game, at least momentarily: "Well, sir, whereabouts in the woods have they gone?"

Garrett began a story of how the men came there without his consent, that he did not want them to stay, and that . . .

Enough, Conger interrupted: "I do not want any long story out of you. I just want to know where these men have gone."

Richard Garrett was afraid, and he started his monologue all over again. Conger turned from the door and spoke gravely to one of his men: "Bring in a lariat rope here, and I will put that man up to the top of one of those locust trees." Even under the threat of hanging, marveled Conger, Garrett "did not seem inclined to tell." A soldier went to get the hemp persuader.

John Garrett emerged from the corn house, walked up to the nearest cavalryman and asked whom they were pursuing. "That I cannot tell you," the trooper answered, telling another soldier to take John to the house. When they got near the house, John saw Doherty, Conger and Baker on the front porch talking to his father. Spotting John Garrett, Conger bellowed to his soldier escort, "Where did you get this man from?" John Garrett came to the rescue of his tongue-tied father.

"Don't hurt the old man: He is scared. I will tell you where the men are you want to find," he said.

"That is what I want to know," said an exasperated Conger. "Where are they?"

Before John had time to answer, Doherty seized him by the collar, pushed him down the steps, put a revolver to his head and ordered him to tell him where the assassins were.

Before meeting up with Booth (left), David Herold (right) played lookout during an attempt to kill the secretary of state.

"In the barn," John Garrett cried out.

Not good enough, warned Conger. Which of the three barns?

In the tobacco barn, said Garrett.

Booth and Herold heard the soldiers rush and surround the barn. "Don't make any noise," Booth whispered. "Maybe they will go off thinking we are not here." Conger heard someone moving around inside, rustling the hay. It was Herold, failing to heed Booth's orders to take cover.

Baker summoned John Garrett to his side and pointed to the tobacco house: "You must go in to the barn and get the arms from those men." Garrett objected violently to the suicidal plan. Baker went on: "They know you, and you can go in." Yes, Booth and Herold *did* know John Garrett—as the man who had ordered them out of his house, refused them the comfort of a bed and locked them in the barn.

Baker explained that this mission was not optional: "Unless you do it, I will burn your property." Baker didn't mean just the tobacco barn.

By now William Garrett had also emerged from the cover of the corn house and joined his brother near the tobacco barn. William pulled the key from his pocket and surrendered it to Baker.

Baker stepped forward and shouted to Booth: "We are going to send this man, on whose premises you are, in to

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get your arms; and you must come out and deliver yourselves up." Booth said nothing; it might be a trick. He readied himself for a dismounted charge by more than 20 cavalrymen the moment the door opened. Baker, key in hand, strode up to the barn door. He inserted the key, turned the lock and, slowly, opened the door. Booth remained invisible, hiding several yards away in the black, inner recesses of the barn. He saw movement. He held his pistols tightly, thumbs ready to cock the hammers of the single-action Colts. But he held his fire. Baker seized John Garrett and half-guided, half-pushed him through the door and closed it behind him.

John Garrett stood alone, in the dark, at the mercy of Lincoln's killer. He spoke timidly, reporting that "the barn was surrounded, that resistance was useless, and that [you] had better come out and deliver [yourself] up."

A growling tenor voice, dripping with malice, replied from the darkness: "You have implicated me."

Garrett tried to reason with them: "Gentlemen, the cavalry are after you. You are the ones. You had better give yourselves up."

Like an apparition, Booth's pale, haunting visage emerged from the void. Then he exploded: "Damn you! You have betrayed me! If you don't get out of here I will shoot you! Get out of this barn at once!" Garrett, glimpsing Booth's right hand in motion, turned and ran from the barn.

FINALLY, at the climax of a 12-day manhunt that had gripped the nation, a heavily armed patrol of 16th New York Cavalry had cornered Lincoln's assassin at the Garrett farm in Port Royal, Virginia. But at that critical moment, Conger and the others hesitated. Instead of ordering their men to rush the barn and take Booth, they had decided to talk him out, and then delegated a solitary, unarmed man, a civilian—and an ex-Rebel soldier, no less—to negotiate Booth's surrender. It was a clear abdication of command responsibility. Twenty-six cavalrymen, each armed with a six-shot revolver, could pour a fusillade of 156 conical lead bullets into the barn before having to reload. Booth could fire 12 rounds from the revolvers and 7 from his Spencer carbine. He wouldn't have time to reload. Or the troops could, without warning, before they fired a shot, charge the barn and try to take Booth by surprise. In the dark, and in the few seconds before they seized him, Booth could not pick off more than a few of them. Secretary of War Edwin Stanton wanted Booth alive for questioning.

Why did they hesitate? If brave Union men could charge Marye's Heights at Fredericksburg in December 1862 and suffer several thousand casualties, and if the valiant regiments of the Army of Northern Virginia could make the disastrous, suicidal Pickett's charge on the third

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12 Days on the Run

Booth and Herold's odyssey began in Washington (the president's box at Ford's Theatre, left) and ended at the Garrett farm outside Port Royal, Virginia (the farmhouse, bottom).

JAMES L. SWANSON COLLECTION; MAP: MIKE REAGAN; PICTURE HISTORY

day at Gettysburg, why couldn't 26 soldiers, under the cloak of darkness, charge two civilians hiding in a barn? Surely the honor of capturing Lincoln's assassin was worth the risk of a few casualties.

Even after John Garrett's failed mission, Doherty, Conger and Baker dithered. The trio deputized Baker as their spokesman. He shouted an ultimatum to the occupants: "I want you to surrender. If you don't, I will burn this barn down in fifteen minutes." It was 2:30 a.m., Wednesday, April 26, 1865. From the time the 16th New York arrived at Garrett's farm until this moment, the fugitives had not spoken one word to their pursuers.

Then a voice from inside the barn bellowed three questions: "Who are you?" "What do you want?" "Whom do you want?"

IT WAS BOOTH. The assassin stepped to the front of the tobacco barn and peered through a space between two boards, mistaking his counterpart for an Army captain.

"We want you," Baker replied, "and we know who you are. Give up your arms and come out!"

Booth stalled: "Let us have a little time to consider it."

Surprisingly, Baker agreed: "Very well."

Ten or fifteen minutes elapsed. The manhunters maintained a keen vigil on all four of the barn walls to ensure that their prey did not slip out unnoticed.

Luther Baker and Everton Conger (left and right, with their boss, Lafayette Baker) abdicated their responsibility at a key moment.

Herold had convinced himself, naively, that once he explained his role the soldiers would send him home. In his mind, he wasn't guilty of anything. Booth had killed Lincoln, and Lewis Powell had stabbed the secretary of state, William Seward. Herold had just gone along for the ride. Booth could roast alive in the tobacco barn if he chose, but Herold implored Booth to release him. Some of the soldiers could hear his begging.

Baker, counting down the minutes on his pocket watch, shouted to Booth that he was running out of time. Five minutes more and he would torch the barn.

Booth relented. Forcing Herold to share his fate would serve no purpose. The actor called out to Baker: "Oh, Captain—there is a man here who wants to surrender awful bad."

Too excited to remain silent, Doherty blurted out: "Hand out your arms." Yes, chimed Baker, "let him hand out his arms."

Their demands perplexed Herold. Would they refuse his surrender until he handed over Booth's firearms? Herold knew that Booth would never give up his guns. "I have none," Herold pleaded.

Doherty did not believe him: "Hand out your arms, and you can come out."

"I have no arms," Herold whimpered, "let me out."

Baker scoffed: "We know exactly what you have got." The Garretts had given Baker and the other officers a complete inventory of the fugitives' arms and equipment: two revolvers, one Spencer repeating carbine, one bowie knife, a pistol belt, a couple of blankets and the clothes on their backs. "You carried a carbine," Baker insisted, "and you must hand it out."

Booth spoke up to end the impasse: "The arms are mine, and I have got them."

Baker disputed the assassin: "This man carried a carbine, and he must hand it out."

Booth argued back, and reminded the nit-picking officers that "there is a man in here who wants to come out."

Yes, Herold affirmed: "Let me out, quick; I do not know anything about this man, he is a desperate character, and he is going to shoot me."

Booth supported Herold's charade: "Let him out; that young man is innocent."

Enough, reasoned Doherty. If they can persuade one of the fugitives to come out of the barn without a fight, why not forget the arms, wait no more and take the man? The lieutenant turned to Baker: "We had better let him out."

"No," Baker countered, "wait until Mr. Conger comes here."

Well, where is he? Doherty demanded. Out of sight, at the back of the barn, preparing to set it on fire, he was told.

"Open that door!" Doherty commanded one of his troopers. "I will take that man out myself."

The lieutenant positioned himself to the side of the door. If he stayed out of the line of fire, Booth could not see—or shoot—him when he opened the door for Herold's exit. Inches apart, separated only by the width of the barn wall, Doherty and Herold could hear each other's breathing. They caught glimpses of each other through the spaces between the boards.

Then, in the last seconds before David Herold left the barn, Booth whispered the last words exchanged between them: "When you go out, don't tell them the arms I have."

With that, Herold passed from fugitive to captive. He and seven others would be convicted in a military court of conspiring to murder Lincoln and attempting to murder Seward. On July 7, Herold would join three of them on the gallows.

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NOW DOHERTY, Baker and Conger faced a bigger problem. Booth remained in that barn, heavily armed and waiting for their next move. Yes, they possessed certain advantages. The assassin was surrounded and outnumbered 29 to one. Escape seemed impossible. But then, so had escape from an audience of more than 1,000 people at Ford's Theatre. Like a baited bear, Booth remained lethal.

He wanted to go down fighting, not hanged like a petty thief. "I have too great a soul to die like a criminal," he had written in his diary a few nights before. He had already perpetrated the most flamboyant public murder in American history. Tonight he would script his own end with a performance to equal his triumph at Ford's.

Booth enjoyed three tactical advantages: he occupied a fortified position, but his adversaries had to come in and get him; they were deployed in the open around the barn and could not see him, but he remained hidden and could see them; they wanted Booth alive and did not want to be killed by him, but he was ready to die, and to take some of them with him. Moreover, morning's first light would illuminate the manhunters and render them perfect targets.

Doherty wanted to wait until morning, but Baker and Conger argued against it. One of Doherty's sergeants, Boston Corbett, volunteered for a suicide mission. He would slip into the barn alone and fight Booth man to man: "I offered to Mr. Conger, the detective officer, and to Lt. Doherty, separately, to go into the barn and take him or fight him—saying if he killed me his weapons would then be empty, and they could easily take him alive." Three times Corbett volunteered; and each time Doherty vetoed him.

Three times Sgt. Boston Corbett (left) volunteered for a suicide mission, and three times Lt. Edward Doherty (right) vetoed him.

Conger and Baker wanted to burn the barn. The flames and choking smoke would do the job for them, at no risk to the troops. Indeed, the only danger would be to those who had to lay kindling against the timbers. Booth might be able to shove his pistol into the four inches of space between the boards and shoot the men at point-blank range.

Conger sent for the Garrett sons. He had one more job for them, he explained. They would lay the kindling. John Garrett gathered pine twigs and set them next to the barn. When he returned with a second armful and bent low to arrange the pile, the rustling alerted Booth.

Garrett jumped when he heard that familiar, menacing voice address him from the other side, just a foot or two away: "Young man, I advise you for your own good not to come here again." Garrett dropped the kindling and retreated.

If they were gathering kindling, Booth realized, the manhunters did not plan on waiting until sunrise. Booth decided to retake the initiative. He challenged his pursuers to honorable combat on open ground.

"Captain," he called out to Baker, "I know you to be a brave man, and I believe you to be honorable. I am a cripple." Booth's tantalizing admission thrilled every man who heard it. The manhunters had suspected, but were not absolutely sure, that the man in the barn was John Wilkes Booth. They had gotten reports that Lincoln's assassin was lame, and now the man in the barn confirmed it. "I have got but one leg," Booth continued. "If you will withdraw your men in line one hundred yards from the door, I will come out and fight you."

As a sign of good faith Booth revealed that he had chosen, at least up to now, to spare Baker's life: "Captain, I have had half a dozen opportunities to shoot you, but I did not."

Baker's eyes darted to the burning candle he held improvidently in his hand. Conger suggested that Baker relieve himself of the inviting target immediately.

This was *better* than Shakespeare. Lincoln's assassin had just challenged 29 men to a duel. Or was it, in Booth's mind, a knightly trial by combat, with victory the reward to the just? Baker declined the glove: "We did not come here to fight you, we simply came to make you a prisoner."

The assassin repeated his challenge but reduced the distance to offer more generous odds to his opponents: "If you'll take your men fifty yards from the door, I'll come out and fight you. Give me a chance for my life."

Again Baker declined.

"Well, my brave boys, prepare a stretcher for me!" Booth jauntily replied.

Conger turned to Baker: "We will fire the barn."

"Yes," his fellow detective agreed, "the quicker the better."

Conger bent over and lit the kindling.

WITHIN MINUTES an entire corner of the barn was blazing brightly. The fire illuminated the yard with a yellow-orange glow that flickered eerily across the faces of the men of the 16th. Booth could see them clearly now but held his fire.

As the fire gathered momentum, it also lit the inside of the barn so that now, for the first time, the soldiers could see their quarry in the gaps between the slats. Booth had three choices: stay in the barn and burn alive; raise a pistol

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barrel to his head and blow out his brains, or script his own blaze of glory by hobbling out the front door and doing battle with the manhunters. He would not stay in the barn. And suicide? Never.

He moved to the center of the barn, swiveled his head in every direction, measuring how quickly the flames were engulfing him. He glanced toward the door and hopped forward, a crutch under his left arm and the carbine in his right, the butt plate against his hip. "One more stain on the old banner," Booth cried out, conjuring up the Confederate battle flag.

Sergeant Corbett watched Booth's every move. Corbett had, by stealth, peeked between one of the gaps between the barn's vertical boards. Booth "turn[ed] towards the fire, either to put the fire out, or else to shoot the one who started it, I do not know which; but he was then coming right towards me . . . a little to my right—a full breast view." Now Booth was within easy range of Corbett's pistol. But the sergeant held his fire: "I could have shot him . . . but as long as he was there, making no demonstration to hurt any one, I did not shoot."

With the rewards on Booth's and his chief accomplices' heads totaling $100,000, there was no shortage of men claiming credit for his capture (above, a check for Sergeant Corbett's share).

Corbett poked the barrel of his revolver through the slit in the wall and aimed it. The sergeant described what happened next:

"Finding the fire gaining upon him, [Booth] turned to the other side of the barn and got towards where the door was; and, as he got there, I saw him make a movement towards the floor. I supposed he was going to fight his way out. One of the men who was watching told me that [Booth] aimed his carbine at him. He was taking aim with the carbine, but at whom I could not say. My mind was upon him attentively to see that he did no harm; and, when I became impressed that it was time, I shot him."

Instantly Booth dropped the carbine and crumpled to his knees. He could not rise. He could not lift his arms. He could not move at all.

Like sprinters cued by a starting gun, Baker rushed into the barn with Conger at his heels. Baker caught Booth before he toppled over and Conger seized the assassin's pistol, having to pry it out of the actor's grasp.

"It is Booth, certainly," Conger cried jubilantly.

Baker glared disapprovingly: "What on earth did you shoot him for?"

"I did not shoot him," Conger protested. "He has shot himself!"

Conger raised Booth up and asked, "Where is he shot?" Conger searched for the wound: "Whereabout is he shot—in the head or neck?" Conger examined Booth's neck and found a hole where blood was running out. "Yes, sir," Conger deduced. "He shot himself."

"No, he did not," Baker said.

There are better places to continue this debate, Conger suggested: "Let us carry him out of here: this place will soon be burning." They carried Booth under the locust trees a few yards from the door and laid him on the grass.

Conger looked back at the barn: "It was burning so fast; and there was no water, and nothing to help with." He went back to the locust trees. Gazing down on Booth's broken body, "I supposed him to be dead. He had all the appearance of a dead man." Then Booth opened his eyes and moved his lips.

Conger called for water, and a soldier offered his canteen. Baker produced a tin cup, and they splashed some of the water on Booth's face and poured a little into his mouth. He spit it out. He could not swallow; he was almost completely paralyzed. He tried to speak.

Conger and Baker bent down and put their ears close to Booth's mouth. After several attempts, Lincoln's assassin spoke: "Tell mother, I die for my country." Conger wanted desperately to confirm the accuracy of what Booth had said. These might be the assassin's historic last words, and they must be reported to the nation exactly as Booth said them.

Enunciating each syllable slowly and clearly so that Booth could understand him, Conger repeated the phrase verbatim. "Is that what you say?," the detective asked.

"Yes," the assassin whispered.

The tobacco barn was now fully ablaze. The detectives shouted for everyone to retreat to the Garrett house. Several men seized Booth by the arms, shoulders and legs and marched quickstep to the farmhouse. They climbed up the stairs and laid Booth flat on the wood-planked piazza. Blood pooled under his head and stained the floorboards. The Garrett girls carried an old straw mattress from the house and laid it on the porch. Conger and the others fold-

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ed it in half and laid Booth's head and shoulders on it. Lucinda Holloway, a Garrett relative, carried out a pillow and gently placed it under his head.

On the porch, Conger observed, Booth "revived considerably. He could then talk so as to be intelligibly understood, in a whisper."

Booth asked for water and Conger and Baker gave it to him. He asked them to roll him over and turn him facedown. Conger thought it a bad idea. Then at least turn me on my side, the assassin pleaded. They did, but Conger saw that the move did not relieve Booth's suffering. Baker noticed it, too: "He seemed to suffer extreme pain whenever he was moved . . . and would several times repeat, 'Kill me.'"

Booth wanted to cough. He asked Conger to put his hand upon his throat and press down. The detective complied, but nothing happened.

"Harder," Booth instructed Conger.

"I pressed down as hard as I thought necessary, and he made very strong exertions to cough, but was unable to do so."

Contrary to his expectations at the Garrett farm, Herold faced criminal charges. After a trial before a military tribunal, he and three other conspirators were hanged on July 7, 1865.

Conger, guessing that Booth feared that some asphyxiating obstruction was stuck in his throat, told Booth: "Open your mouth, and put out your tongue, and I will see if it bleeds." Conger reassured Booth: "There is no blood in your throat; it has not gone through any part of it there."

"Kill me," Booth again implored the soldiers. "Kill me, kill me!"

"We don't want to kill you," Conger comforted him. "We want you to get well."

Conger wanted Booth alive so they could bring him back to Washington. But it was obvious that John Wilkes Booth was not going back alive. Who had fired that shot? Conger demanded to know. He walked away in search of the trigger-happy trooper.

Presently, Boston Corbett came forward, snapped to attention, saluted Conger and proclaimed, "Colonel, Providence directed me."

Corbett made the same confession to his commanding officer, Doherty, claiming that he had shot Booth only because he believed the assassin was about to open fire on the soldiers. And, Corbett continued, he did not intend to kill Booth. He wanted only to inflict a disabling wound.

Several soldiers compared the location of Booth's wound with that of Lincoln's. Perhaps, they marveled, God's justice had directed Corbett's bullet to the back of the assassin's head. Corbett, too, wondered: "[W]hile Booth's body lay before me, yet alive, but wounded, and when I saw that the bullet had struck him just back of the ear, about the same spot that his bullet hit Mr. Lincoln, I said within myself, 'What a fearful God we serve.'"

Kneeling at Booth's side, Lucinda Holloway gazed upon his face—"luminous" is how she remembered it for the rest of her life. Booth stuck out his tongue. He was thirsty. "I took my hand kerchief and dipped it in water and moistened his lips," she would recall. "I again moistened his lips and he repeated his message to his mother. Soon he gasped, and I again moistened his lips and tongue a third time."

Booth rallied and opened his eyes.

"The damn rebel is still living!" a soldier exclaimed.

"My hands," Booth whispered. Baker raised them up for Booth to see. For the last time John Wilkes Booth beheld the hands, now helpless, that had slain a president. Tenderly, Lucinda Holloway massaged his temples and forehead. Her fingertips felt the life draining out of him: "The pulsations in his temples grew weaker and weaker."

Mustering all his remaining strength, Booth looked at his hands and spoke again: "Useless, useless."

His breathing turned sporadic and labored, and he gasped for breath every few minutes. His lips turned purple and his throat swelled.

The rising sun nudged above the horizon and colored the eastern sky. In Albany, New York, mourners who had waited in line all night filed past Abraham Lincoln's remains, displayed in the state Capitol's Assembly Chamber. That afternoon the funeral train would pull out of the station, heading west to the prairies. Lincoln would be home soon.

Booth gasped again.

The sun broke free from the horizon and flooded Garrett's farm with light, which shone on Booth's face. The soldiers tried to shield his eyes by draping clothes over the back of a chair that they set up on the porch between Booth and the sun.

The stage grew dark. His body shuddered. Then John Wilkes Booth was dead. The chase for Abraham Lincoln's assassin was over.

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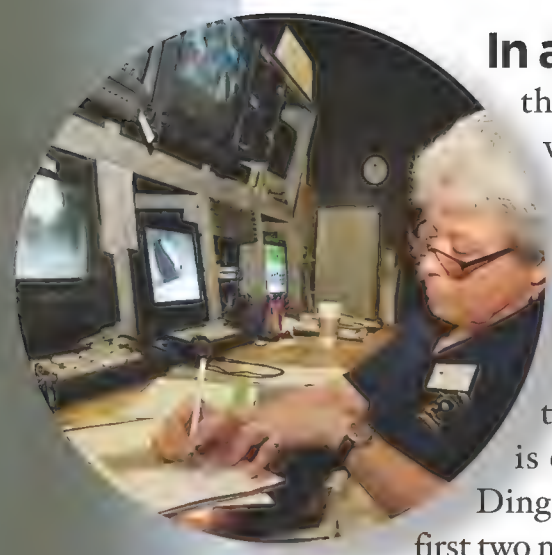
LEARNING FROM TAIS

The giant panda born at Washington, D.C.'s National Zoo has charmed animal lovers. Now he's teaching scientists more than they had expected

BY LAURA TANGLEY

TAI SHAN



In a cramped, dimly lit room, three women stare at a bank of blinking video monitors. Each of the six screens shows, from a slightly different angle, a black-and-white ball of fluff—Tai Shan, the giant panda cub born last summer at Smithsonian's National Zoo. Every two minutes, at the ring of a bell, the volunteer researchers write down what the cub is doing. Ding! Sleeping. Ding! A yawn. Ding! The right front paw twitches. For the first two months of Tai Shan's life, Zoo staff and volunteers monitored him 24 hours a day. He is one of the most closely studied pandas in history.

He's also one of the capital's biggest celebrities. In December, when the cub made his public debut, 13,000 free tickets to see him were snapped up on-line in two hours. Fans lined up in subfreezing temperatures before the ticket booth opened for a chance at the additional 60 tickets handed out each day. More than 200,000 people voted on the cub's name—Tai Shan (tie-SHON) means "peaceful mountain"—while millions logged onto the Zoo's live "panda cam" (nationalzoo.si.edu/Animals/GiantPandas).

The Zoo's first surviving panda cub, and only the fourth nationwide, Tai Shan "is the culmination of a decade of collaborative research between the United States and China," says David Wildt, chairman of the Zoo's reproductive sciences department. In 2005, twenty-one cubs born in captivity survived (two in the United States, one in Japan and the rest in China), more than twice as many as survived in 2004 and more than any other year to date. That achievement, along with new panda reserves and other conservation measures in China, are upping the odds that one of the world's most endangered—and most beloved—creatures will survive, not just in captivity but in the wild.

As recently as two decades ago, the panda's future looked bleak. Restricted to remote, mist-shrouded bamboo forests in mountainous southwestern China, the bears had lost more than half of their habitat by the late 1980s. For centuries, logging and farming had pushed pandas to steeper and higher terrain. The species' population was down to an estimated 1,000 animals scattered among two dozen isolated groups. Although another hundred or so pandas were kept in Chinese breeding centers, their reproductive rate was so low they offered little hope for replenishing dwindling numbers. By 1997, only 26 percent of captive pandas had ever bred.

Pandas are notoriously difficult to breed. Females ovulate just once a year and remain fertile for only one or two days. Most captive males, meanwhile, are either uninterested in sex

One of the rare surviving U.S.-born giant pandas, Tai Shan has been closely watched (above, a Zoo volunteer monitors remote video of baby Tai Shan and mother Mei Xiang). The product of a ten-year Sino-American conservation effort, the cub (left, at 7 months) may help scientists reestablish the endangered giant panda in the wild, where about 1,600 are believed to exist.

In 1972, China gave the U.S. two pandas in exchange for musk oxen (above, First Lady Patricia Nixon visits newly arrived Ling-Ling). Today, Tai Shan draws crowds (First Lady Laura Bush at the Zoo).

or are so aggressive that they pose a danger to fertile females. Even when both partners seem willing, males are often unable to consummate the affair. It was a decade before the Zoo's first panda pair, Ling-Ling and Hsing-Hsing, finally mated, in 1983, after years of fumbling, misdirected embraces. Ling-Ling and Hsing-Hsing—goodwill gifts from China commemorating President Richard Nixon's 1972 visit—produced five cubs during their two decades together at the Zoo, but none lived longer than a few days.

In the 1970s, scientists at the Beijing Zoo pioneered techniques to artificially inseminate pandas, and they produced their first cub in 1978. But the procedure had a high failure rate, and only a small percentage of the cubs born in captivity in China, whether conceived artificially or naturally, survived as long as a year. The bear's prospects began to look up in 1996, when Chinese officials invited a group of U.S. scientists experienced in breeding other endangered species to collaborate on giant panda research. The United States was to provide much of the science and technical know-how, while China would contribute knowledge gained through decades of panda studies and, of course, provide the actual animals. "We jumped at the opportunity," recalls National Zoo reproductive physiologist JoGayle Howard, who had logged countless hours trying to make Ling-Ling a mom.

Beginning in 1998, U.S. scientists began traveling regularly to China, where they and their Chinese colleagues assessed the health, reproduction, genetics, behavior and nutrition of 61 animals at China's three largest breeding centers, in Wolong (see p. 81), Chengdu and Beijing. The survey's most surprising finding was that 80 percent of the pandas, even those that had been dismissed as "poor breeders," were in fact "healthy, reproductively competent animals that had potential to contribute to the captive population," says Wildt. A decade later, most of those animals are indeed contributing, thanks to the surge in panda science spawned by the collaboration. "Today," Wildt adds, "we know more about the biology of the giant panda than we do about any other endangered species in the world."

The giant panda is a biological oddity. A member of the bear family, *Ailuropoda melanoleuca* ("black and white cat-footed bear") diverged from the main bear lineage 15 million to 25 million years ago. In addition to its bold markings, the panda has a larger and rounder head than any other bear. Like other bears, pandas are solitary creatures, except for mothers and their cubs, which stay together for up to two years. The most unusual thing about the giant panda is its diet. Unlike other ursids, which rely at least in part on insects,

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AP / WIDE WORLD PHOTOS; SHEALAH CRAIGHEAD / THE WHITE HOUSE / AP / WIDE WORLD PHOTOS; P. 76, 77 ANN BATDORF / NATIONAL ZOOLOGICAL PARK, S.I.; P. 77 JESSIE COHEN / NATIONAL ZOOLOGICAL PARK, S.I.

fish, mammals or other meat, pandas are vegetarians. Stranger still, 99 percent of the bear's diet consists of bamboo, a grass. A panda might appear well suited to its bamboo diet. The animal's large jaw is equipped with powerful chewing muscles and large, flat molars that grind down the tough grass. Its paws sport opposable "thumbs"—actually elongated wrist bones—allowing a panda to hold a bamboo stalk while munching it. (The animals usually do this while seated in a remarkably human-like position, one of the traits people find so appealing about pandas.) But a panda's digestive system lacks the specialized gut that cows and deer have to break down grass efficiently. This means the bears must spend about 14 hours a day eating up to 40 pounds of bamboo. Adults weigh between 185 and 245 pounds. Because pandas aren't able to accumulate much fat, they cannot afford to take the winter off to hibernate, unlike Asiatic black bears that live in the same habitat. "The panda's dependence on bamboo drives its entire physiology and ecology," says National Zoo animal nutritionist Mark Edwards.

Unlike polar bears and grizzlies, which travel long distances to find food, pandas can stay close to home. "Essentially, they're living in their own salad bowl," says Edwards. But the animal's diet also makes it vulnerable to bamboo die-offs, which occur naturally every 40 to 100 years after the plants flower. In the past, when one bamboo stand died, pandas simply migrated to another. But most of the species' habitat has been destroyed or fragmented, threatening to strand the bears.

The giant panda's dependence on bamboo may even help explain its unusual reproductive system. When a female becomes pregnant, the fertilized egg does not immediately attach to the uterine wall, as it does in most mammal species. Instead, the embryo floats within the reproductive tract for many months, attaching only about 45 days before the cub's birth. Edwards suspects a female cannot build up enough nutrients from bamboo to support a fetus for any longer. As a result, newborn cubs have only just begun to develop. Pink and hairless, they weigh about a quarter of a pound, or the same as a stick of butter. (Hence Tai Shan's nickname, Butterstick.) Compared with the size of the mother, "no other non-marsupial mammal has a smaller offspring," says Edwards.

Pandas give birth to twins about half the time. This itself is not unusual—most bears have twins or triplets—but a panda mother usually selects one of her two cubs to raise and lets the other die. Biologists once believed that such an apparently illogical act occurred only in captivity. But in fieldwork conducted at Wolong Nature Reserve in the late 1980s, biologist Pan Wenshi often found a dead cub near a mother that was caring for a healthy one. Scientists speculate that new panda mothers just can't afford to feed two cubs—another behavior that may be an evolutionary adaptation to the animals' low-energy diet.

Tai Shan's story begins in 2000, when his mother, Mei Xiang (may-SHONG), and father, Tian Tian (t-YEN t-YEN), came to the National Zoo on a ten-year loan from China. (Three other U.S. zoos—in San Diego, Atlanta and Memphis—also host pandas; in exchange, each institution must contribute at least $1 million per year to panda conservation in China.) In 2003, as the bears were just reaching sexual maturity at ages 5 and 6, they mated for the first time, but no pregnancy followed. The next year, after the pandas tried unsuccessfully to mate on their own, Zoo scientists inseminated Mei Xiang with Tian Tian's sperm, again without conception.

Last spring, as Mei Xiang began to show signs that she was coming into estrus, the scientists prepared to place Tian Tian's sperm directly into her uterus. Because the procedure would require Mei Xiang to undergo general anesthesia—which always carries a risk—they decided to try the

"In China, we learned just how narrow the window of opportunity is" for inseminating pandas, says JoGayle Howard (right, with David Wildt at Smithsonian's Conservation and Research Center in Virginia). Thanks to new fertility monitoring techniques, her timing was perfect.

JAY L. CLENDENIN

insemination just once, a considerable gamble given how briefly a female is fertile. "In China, we learned just how narrow the window of opportunity is," says JoGayle Howard, who performed the procedure.

Recent studies have fine-tuned techniques to predict that 24- to 48-hour period. One is to analyze vaginal cells. In exchange for a reward—a biscuit, apple or pear—Mei Xiang has been trained to enter her 5- by 4-foot training cage and submit to all manner of pokes and probes. Zoo technicians examine cells swabbed from her vagina to tell how close to ovulation she is. They also siphon her urine off the enclosure floor. National Zoo endocrinologists Steve Monfort and David Kersey analyze these samples for changes in estrogen levels.

The big day turned out to be March 10, 2005. Earlier that week, Mei Xiang had increased her frequency of "scent marking," or rubbing a gland near her tail against the ground to deposit a sticky substance with an odor detectable by other pandas. Zoo scientists were monitoring her urine and vaginal cells round-the-clock. When tests showed Mei Xiang was ovulating, they first gave Tian Tian an opportunity to do the job himself. But after 24 hours—during which he "hadn't achieved the proper alignment," says assistant curator Lisa Stevens—the scientists took over.

To get Tian Tian's sperm, the researchers anesthetized him and used an animal breeding technique called electroejaculation, in which a probe inserted into the male's rectum produces electrical stimulations that cause ejaculation. For the insemination, Howard used a modified laparoscope (a tiny telescope with a fiber optic light often used in human medicine) to guide a catheter through Mei Xiang's cervix and into her uterus. "We felt the timing was right on," says Howard. "The procedure couldn't have gone faster or more smoothly, and that's what made me nervous."

Zoo scientists wouldn't know whether they had succeeded for nearly four months: giant pandas frequently go through "pseudopregnancies" in which non-pregnant females exhibit behavioral and hormonal changes similar to those of pregnant females. (And given the tiny size of a panda fetus, the pregnancy doesn't show.) "I didn't relax until that cub was on the ground," says Howard. That was at 3:41 a.m. on July 9, 2005. Still, Howard wasn't ready to uncork the champagne. In addition to routinely rejecting a twin, panda moms have been known to ignore single cubs. Says Howard: "They either act like they're scared of it or look like they're thinking, 'I'm not taking care of that thing,' and walk away."

But just two minutes after giving birth, Mei Xiang gently picked up tiny Tai Shan and began to cradle and cuddle him. For the following week, she refused to leave their "den"—a darkened 10- by 12-foot room—even to eat or drink. On the 7th day, she left him (for three minutes) to get a drink of water; she did not eat until day 17. "From the beginning, Mei Xiang couldn't have been a more perfect mother," says Howard. "And Tai Shan couldn't be a healthier cub."

The most important reason for keeping pandas in captivity—beyond public education, research and fundraising—is to prevent their extinction in the wild. Captive populations of endangered animals are insurance, should the species vanish in its native habitat, and a potential source of animals for reintroductions into the wild. But captive populations are prone to inbreeding, a major threat to their survival. U.S. and Chinese scientists now meet before each spring's breeding season to recommend the best panda pairings to ensure a diverse mix of genetic backgrounds, and most breeding centers move animals or their sperm from one institution to another as needed. Giant pandas have an advantage over other endangered species, such as the black-footed ferret and the California condor, whose numbers fell so low that inbreeding could not be avoided. "We know we're growing a genetically healthy population of pandas," says Wildt. According to National Zoo population manager Jonathan Ballou, the next step is to increase the number of captive pandas until the population is self-sustaining. He calculates that the magic number is 297 pandas; today there are 185, an all-time high.

Most scientists say it is not time yet to return captive pandas to the wild. Reintroduction is risky to the captive-born animals and potentially to any wild pandas they might fight with or infect with diseases. And what's left of the panda's habitat is not yet secure.

There's no question the species' prospects in the wild have improved. Eight years ago, China banned logging in all forests within the panda's range. To curb erosion, the government's six-year-old Grain-to-Green Program pays farmers cultivating land on slopes steeper than 30 degrees to leave those fields fallow or plant trees—a policy that also benefits mountain-dwelling

Age: 3 months. Weight: 12.7 pounds. Length: 25.5 inches. "We like to say our cub is ahead of the curve," Lisa Stevens (left, with the Zoo's Suzan Murray) says of "Butterstick."

JESSIE COHEN / NATIONAL ZOOLOGICAL PARK, S.I.

HOMELAND FERTILITY

China's biggest breeding center is experiencing a baby boom

BY MIKE MEYER

"Time to eat!" yells keeper Hu Haiping. She bangs metal pots together, but the sound is drowned out by the Pitiao River, rushing nearby. "Hurry up, lazy bones!" she teases. The valley's walls glow from the setting sun, and a breeze rustles the bamboo. She waves stalks of the plant in the air. Six panda cubs amble toward their dinner.

The National Zoo's proud panda parents, Tian Tian and Mei Xiang, once called this open-air, grassy pen home. It's one of dozens at China's Conservation and Research Center for the Giant Panda, near Wolong ("Sleeping Dragon") village. Wolong, 84 miles northwest of Sichuan's provincial capital, Chengdu, is the heart of both the giant panda's natural habitat and human-assisted breeding. "This year was our most prosperous ever!" says trainer Han Hongyi about 2005's crop. "Sixteen pandas were born, which is a world record, and all have survived!" Han offers me a Pride-brand cigarette, whose package logo shows a panda.

The open pens, winding cobblestone walkways, bamboo rails and informative plaques—in Chinese and English—look nothing like the center I saw on my last visit, eight years before. Han laughs when I say that due to its then-barred cages, I used to think of Wolong as a panda penitentiary. Now it resembles a state-of-the-art zoo. We walk past the panda hospital and food preparation center to the first of several open-air pens. A panda seated by a pool of water munches on *wo tou*—a coarse, nutritious cake made with rice and corn that was invented at the center.

The panda ignores us. "My job is to train them to be accepting of humans, so we can help them breed," Han explains. "But of course we don't want them to be too reliant. Last year, we began reintroduction training on a panda named Xiang Xiang. He lives up on the mountain in a ten-square-mile enclosed area." Indeed, having been taught feeding and nesting skills, Xiang Xiang on April 28 became the first hand-reared panda relocated to the wild.

Above the pens are plaques bearing the names given to pandas by their adoptive "parents," one-third of whom are American. And so alongside the names Dou Dou and Tao Tao are Gertie and Marissa, the latter adopted by Brownie Troop 460. Yearlong adoptions range from $500 to $5,000. Visitors to the center can have their pictures taken holding a panda for $30.

Although Wolong researchers artificially inseminate female pandas, they first attempt matchmaking. The panda keepers try to increase male virility by building physical strength, so breeder male pandas live in big cages with logs to climb on. The keepers put males in pens adjacent to prospective partners to minimize aggression when the pair is given a chance to mate. Wolong has experimented with "panda pornography" to educate inexperienced males. Pandas watched videos showing peers mating, a method that, at least in one case, seems to have helped.

Wolong was made a nature reserve in 1963. Today, nearly 5,000 people live in Wolong village and the surrounding valley, and the area is home to 30 other protected species, including the red panda, golden monkey, musk deer and snow leopard.

When I last visited Wolong, researchers said poaching was among their greatest challenges. Now, according to Wei Li, director of Wolong's Panda Club, which runs the research station's Web site and coordinates volunteer tours, education efforts have sharply curtailed illegal hunting as well as deforestation of panda habitat. Wolong village now boasts more than a dozen restaurants and hotels to play host to some 460,000 visitors a year.

The research center's greatest need is financing, primarily for food. Pandas are gluttons, and inefficient ones at that. Researchers are paying local farmers to plant bamboo, but for now they must buy the plant from a neighboring community. "One panda eats the equivalent of $3,000 to $4,000 a year," Wei says. "Add in medical care and housing, and one panda requires $12,500 annually." When I ask how the center makes ends meet, the room falls silent. Then somebody asks, "Would you like to adopt a panda?"

The panda breeding center near Wolong, China (above, a holding pen), produced 16 cubs last year (below, the center's Zhang Guiquan with a newborn, proportionally one of the smallest mammal babies). Pandas have a thumb-like wrist bone (left) that allows them to handle bamboo.

KATHERINE FENG / GLOBIO / MINDEN PICTURES (3)

pandas. About 60 reserves are set aside for pandas today, up from 13 in the early 1990s. Such measures seem to be helping: a 2004 panda survey by the State Forestry Administration of China and the World Wildlife Fund reported that about 1,600 pandas remain in the wild, which appears to be an increase since the 1980s.

U.S. zoos are beginning to direct larger portions of their panda funds to conserving the animals in the wild. Of the $1.4 million that the National Zoo pays China annually, about $200,000 supports fieldwork. Zoo staff have trained hundreds of Chinese conservation professionals in techniques such as using satellites to assess habitats and setting heat-sensing camera "traps" to document animals. In the past year, the cameras have snapped their first photos of giant pandas (along with nearly 25 other mammal species). Researchers are eager to outfit some pandas with radio transmitters to track their movements, but China has stopped granting permission for such studies in recent years, worried the practice might harm the animals. The decision has slowed research in pandas' native habitat, some of the steepest and most difficult to traverse forests in the world. "Radio telemetry is how we learn about wildlife," says National Zoo ecologist William McShea. "At least 80 percent of what's known about black, polar and grizzly bears, for example, is based on radio tracking of the animals."

Other scientists are working to restore panda habitat. The Memphis Zoo, whose pandas Ya Ya and Le Le are just now approaching sexual maturity, is spending part of its panda fees to restore 2,000 acres of bamboo forest adjacent to Foping Nature Reserve, in Shaanxi Province, which has the highest panda density of any reserve. Planted last summer, the bamboo is expected to be thriving within three years. According to the zoo's research coordinator, John Ouellette, the restored area "will provide a corridor between the reserve and a large block of undeveloped forest where pandas have been spotted."

Despite China's burgeoning human population and economy, scientists are optimistic that the country will remain committed to protecting the species. "Over the past decade, there's been a tremendous change in the attitude of the Chinese government," says Donald Lindburg, head of giant panda conservation programs at the San Diego Zoo, which has produced the only other surviving U.S. cubs. "As the world has become more aware that China is the only place that pandas live, there's a huge sense of national pride. China will never allow this species to go extinct."

Although Chinese breeding centers typically take cubs from mothers before they reach 6 months of age so that females will go into estrus again, Tai Shan (and the San Diego cubs) are being allowed to stay with their mothers until they're at least a year and a half old. (Once the cubs turn 2, under the terms of the panda loan agreement, they will be sent back to China.) Scientists say removing 6-month-old cubs may hinder the development of normal adult behaviors, including mating. "We suspect that many of the behavioral problems we see in captivity stem from how we've been rearing the animals," says Stevens. Another problem may be U.S. zoos' practice of keeping giant pandas in male-female pairs, whereas in the wild competing males may fight one another during the breeding season. "It's possible that captive males are aggressive toward females because they don't have anyone else to fight with," says Wildt.

These days, Tai Shan is no longer under 24-hour surveillance, but he still receives intense scrutiny. Veterinarians regularly measure and weigh him; take his temperature, respiration rate and heart rate; and record developmental milestones such as when his eyes opened (7 weeks), teeth emerged (14 weeks) and nose turned from pink to black (6 months). He's growing faster than the other U.S. cubs, and he has displayed certain behaviors sooner than expected. In late January, the precocious 6-month-old scent-marked for the first time, a record.

Tai Shan hasn't outgrown his appeal. Watching him gambol with his mother in their outdoor park or 25- by 30-foot, glass-fronted enclosure, the crowds are reduced to babbling. "He's so cute!" "Awwww." To Stevens, such a reaction is not surprising. "Pandas retain even in adulthood many characteristics of human babies," she says, referring to the animal's round face and body, high forehead, and big forward-facing eyes. "We're genetically programmed to find them appealing." Stevens, who has worked at the Zoo for 28 years with more than 30 species, says "the public's passion for pandas far exceeds that for any other animal."

Tai Shan (at 5 months, with mom Mei Xiang) may stay with his mother for a year and a half—an unusually long span that researchers hope will improve his odds of breeding.

JESSIE COHEN / NATIONAL ZOOLOGICAL PARK, S.I.

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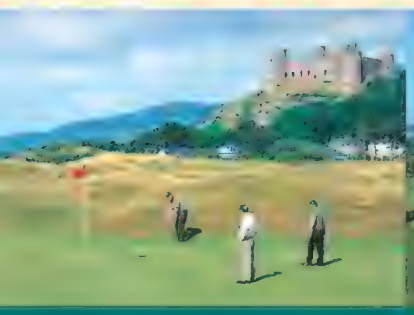

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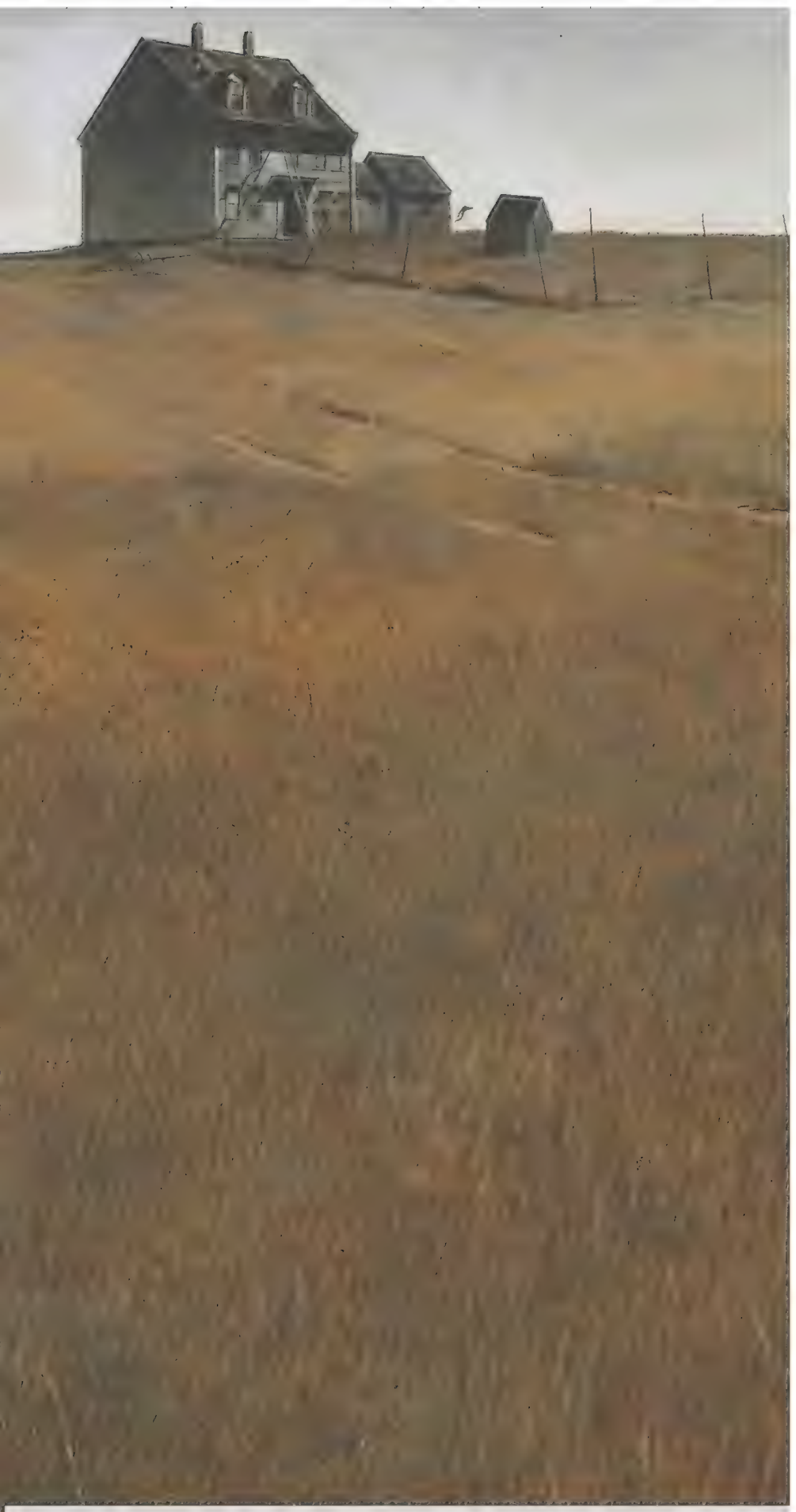
“When I was painting *Christina's World* [above],” says Wyeth (right, in 1976 at his home in Chadds Ford), “I would sit there by the hours working on the grass and I began to feel I was really out in the field. I got lost in the texture of the thing. I remember going down into the field and grabbing up a section of earth and setting it on the base of my easel. It wasn't a *painting* I was working on. I was actually working on the ground itself.”



WYETH'S WORLD

After seven decades, critics still differ over Andrew Wyeth's stature as an artist. A new exhibition stirs the debate

BY HENRY ADAMS

IN THE SUMMER OF 1948 a young artist named Andrew Wyeth began a painting of a severely crippled woman, Christina Olson, painfully pulling herself up a seemingly endless sloping hillside with her arms. For months Wyeth worked on nothing but the grass; then, much more quickly, delineated the buildings at the top of the hill. Finally, he came to the figure itself. Her body is turned away from us, so that we get to know her simply through the twist of her torso, the clench of her right fist, the tension of her right arm and the slight disarray of her thick, dark hair. Against the subdued tone of the brown grass, the pink of her dress feels almost explosive. Wyeth recalls that, after sketching the figure, "I put this pink tone on her shoulder—and it almost blew me across the room."

Finishing the painting brought a sense of fatigue and letdown. When he was done, Wyeth hung it over the sofa in his living room. Visitors hardly glanced at it. In October, when he shipped the painting to a New York City gallery, he told his wife, Betsy, "This picture is a complete flat tire."

He couldn't have been more wrong. Within a few days, whispers about a remarkable painting were circulating in Manhattan. Powerful figures of finance and the art world quietly dropped by the gallery, and within weeks the painting had been purchased by the Museum of Modern Art (MoMA). When it was hung there in December 1948, thousands of visitors related to it in a personal way, and perhaps somewhat to the embarrassment of the curators, who tended to favor European modern art, it became one of the most popular works in the museum. Thomas Hoving, who would later become director of the Metropolitan Museum of Art, recalls that as a college student he would sometimes visit the MoMA for the sole purpose of studying this single painting. Within a decade or so the museum

had banked reproduction fees amounting to hundreds of times the sum—$1,800—they had paid to acquire the picture. Today the painting's value is measured in the millions. At age 31, Wyeth had accomplished something that eludes most painters, even some of the best, in an entire lifetime. He had created an icon—a work that registers as an emotional and cultural reference point in the minds of millions. Today *Christina's World* is one of the two or three most familiar American paintings of the 20th century. Only Grant Wood, in *American Gothic*, and Edward Hopper, in one or two canvases such as *House by the Railroad* or *Nighthawks*, have created works of comparable stature.

MORE THAN HALF a century after he painted *Christina's World*, Wyeth is the subject of a new exhibition at the Philadelphia Museum of Art. The first major retrospective of the artist's work in 30 years, the exhibition, on display through July 16, was co-organized with the High Museum of Art in Atlanta, where it opened in November 2005. A concurrent exhibition at the Brandywine River Museum in Wyeth's hometown of Chadds Ford, Pennsylvania, featuring drawings from the artist's own collection, is also on view through July 16.

The title of the Philadelphia exhibition, "Andrew Wyeth: Memory and Magic," alludes not only to the first major exhibition in which Wyeth was included, the "Magic Realism" show of 1943 at New York's Museum of Modern Art, but also to the importance of magic and memory in his work. "Magic! It's what makes things sublime," the artist has said. "It's the difference between a picture that is profound art and just a painting of an object." Anne Classen Knutson, who served as curator of the exhibition at the High Museum, says that Wyeth's "paintings of objects are not straightforward illustrations of his life. Rather, they are filled with hidden metaphors that explore common themes of memory, nostalgia and loss."

Over a career that has spanned seven decades, Wyeth, now 88 and still painting, has produced a wealth of technically stunning paintings and drawings that have won him a huge popular following and earned him a considerable fortune. But widespread acceptance among critics, art historians and museum curators continues to elude him, and his place in history remains a matter of intense debate. In 1977, when art historian Robert Rosenblum was asked to name both the most overrated and underrated artist of the century, he nominated Andrew Wyeth for both categories. That divergence of opinion persists. Some see Wyeth as a major figure. Paul Johnson, for example, in his book *Art: A New History*, describes him as "the only narrative artist of genius during the second half of the twentieth century." Others, however, decline even to mention Wyeth in art history surveys. Robert Storr, the former curator of painting at MoMA, is openly hostile to his work, and *Christina's World* is pointedly omitted from the general handbook of the museum's masterworks.

The current exhibition has only stirred the debate. "The museum is making a statement by giving Wyeth this exhibition," says Kathleen Foster, the Philadelphia Museum's curator of American art. "So I think it's clear that we think he's worth this big survey. The show aims to give viewers a new and deeper understanding of Wyeth's creative method and his accomplishment."

Andrew Wyeth (top, at age 2, in 1919, with his father, artist NC Wyeth) became an art world celebrity at 20 in 1937 with the sold-out exhibition of his watercolors in New York City (left, *The Lobsterman*, 1937). "With no reservations whatsoever," said NC, "they represent the *very best* watercolors I ever saw." Andrew and Betsy Wyeth (above in 1941) were married in 1940; she was 18, he, 22. "She didn't paint the pictures," says Wyeth of Betsy. "She didn't get the ideas. But she made me see more clearly what I wanted."

PHOTOS: WYETH FAMILY ARCHIVE; WILLIAM E. PHELPS / WYETH FAMILY ARCHIVE; ANDREW WYETH / HUNTER MUSEUM OF AMERICAN ART, CHATTANOOGA, TN. GIFT OF THE BENWOOD FOUNDATION.; PP. 84, 85 ANDREW WYETH / MOMA / ART RESOURCE, NY; P. 85 ARNOLD NEWMAN / GETTY IMAGES

Art history professor **HENRY ADAMS** *also wrote the catalog for the Brandywine River Museum's exhibition of Wyeth's drawings.*

"The boy was me at a loss, really," says Wyeth. "His hand, drifting in the air, was my hand, groping, my free soul."

ANDREW WYETH was born in Chadds Ford in 1917, the fifth child of artist NC Wyeth and his wife, Carolyn Bockius. One of the most notable American illustrators of his generation, NC produced some 3,000 paintings and illustrated 112 books, including such classics as *Treasure Island*, *Kidnapped* and *The Boy's King Arthur*.

With a $500 advance from Scribner's for his illustrations for *Treasure Island*, NC made a down payment on 18 acres of land in Chadds Ford, on which he built a house and studio. As his illustrations gained in popularity, he acquired such trappings of wealth as a tennis court, a Cadillac and a butler. Ferociously energetic and a chronic meddler, NC attempted to create a family life as studiously as a work of art, carefully nurturing the special talents of each of his children. Henriette, the eldest, became a gifted still-life and portrait artist; Nathaniel became a mechanical engineer for DuPont; Ann became an accomplished musician and composer; Carolyn became a painter.

Andrew, the youngest child, was born with a faulty hip that caused his feet to splay out when he walked. Frequently ill, he was considered too delicate to go to school. Instead, he was educated at home by a succession of tutors and spent much of his time making drawings, playing with his collection of toy soldiers—today he has more than 2,000—and roaming the woods and fields with his friends,

In *Winter* (above), painted in 1946, the year after NC Wyeth's death, the hill, Wyeth has said, became the body of his father. "I have such a strong romantic fantasy about things and that's what I paint," he says, "but come to it through realism."

wearing the costumes his father used for his illustrations. According to biographer Richard Meryman in his book *Andrew Wyeth: A Secret Life*, Andrew lived in awe of his powerful, seemingly omniscient father, who was nurturing but had a volatile temper. Famously elusive and secretive as an adult, Andrew likely developed these qualities, says Meryman, as a defense against his overbearing father. "Secrecy is his key to freedom," writes Meryman, one of the few non-family members in whom the artist has confided.

Until Andrew's adolescence, his father provided no formal artistic instruction. NC somehow sensed a quality of imagination in his son's drawings that he felt shouldn't be curbed. Andrew's last pure fantasy picture, a huge drawing of a castle with knights laying siege, impressed his father, but NC also felt that his son had reached the limit of what he could learn on his own.

On October 19, 1932, Andrew entered his father's studio to begin academic training. He was 15 years old. By all accounts, NC's tutorials were exacting and relentless. Andrew copied plaster casts. He made charcoal drawings of still-life arrangements, drew and redrew a human skele-

ANDREW WYETH / NORTH CAROLINA MUSEUM OF ART, RALEIGH

ton—and then drew it again, from memory. Through these and other exercises, his childhood work was tempered by solid technical mastery. "My father was a terrific technician," says Wyeth. "He could take any medium and make the most of it. Once I was making a watercolor of some trees. I had made a very careful drawing and I was just filling in the lines. He came along and looked at it and said, 'Andy, you've got to free yourself.' Then he took a brush and filled it with paint and made this sweeping brushstroke. I learned more then from a few minutes of watching what he did than I've ever learned from anything since." After two years of instruction, his father set him loose.

Andrew's first notable works were watercolors of Maine that reflect the influence of Winslow Homer. Wyeth began producing them in the summer of 1936, when he was 19. Fluid and splashy, they were dashed off rapidly—he once painted eight in a single day. "You have a red-hot impression," he has said of watercolor, "and if you can catch a moment before you begin to think, then you get something."

"They look *magnificent*," his father wrote to him of the pictures after Andrew sent a cluster of them home to Chadds Ford. "With no reservations whatsoever, they represent the *very best* watercolors I ever saw." NC showed the pictures to art dealer Robert Macbeth, who agreed to exhibit them. On October 19, 1937, five years to the day after he had entered his father's studio, Andrew Wyeth had a New York City debut. It was the heart of the Depression, but crowds packed the show, and it sold out on the second day—a phenomenal feat. At the age of 20, Andrew Wyeth had become an art world celebrity.

Wyeth painted *Trodden Weed*, a self-portrait and meditation on the fragility of life, in 1951, a few weeks after surgery on a lung. "If a painting is good," says Wyeth, "it will be mostly memory."

But Wyeth had already begun to feel that watercolor was too facile. He turned to the Renaissance method of tempera—egg yolk mixed with dry pigment—a technique he had learned from his sister Henriette's husband, Peter Hurd, the well-known Southwestern painter. By 1938, Wyeth was devoting most of his attention to the medium. He was also gradually emerging from his father's shadow, a process that was hastened by the arrival of a new person in his life, Betsy James.

Andrew met Betsy, whose family summered in Maine not far from the Wyeths, in 1939, and he proposed to her when they had known each other for only a week. They married in May 1940; Andrew was 22, Betsy, 18. Although not an artist herself, Betsy had grown up in a household preoccupied with art and design. Beautiful, sensitive, unconventional, intuitive and highly intelligent, she not only managed household affairs and raised their two sons—Nicholas, now an art dealer, and James (Jamie), a much-exhibited painter and watercolorist—but she also became Andrew's protector, his model and his principal artistic guide, taking over the role his father had performed so assiduously.

Even when sales were slow, she insisted that her husband turn down commercial illustration projects and focus on painting. Betsy "made me into a painter that I would not have been otherwise," Wyeth told Meryman. "She didn't paint the pictures. She didn't get the ideas. But she made me see more clearly what I wanted. She's a terrific taskmaster. Sharp. A genius in this kind of thing. Jesus, I had a severe training with my father, but I had a more severe training with Betsy. . . . Betsy galvanized me at the time I needed it."

Andrew needed Betsy's support, for his father did not approve of his subdued, painstaking temperas. "Can't you add some color to it?" NC asked about one of them. He was particularly disparaging about Andrew's 1942 tempera of three buzzards soaring over Chadds Ford. "Andy, that doesn't work," he said. "That's not a painting." Discouraged, Andrew put the painting in his basement, where his sons used it to support a model train set. Only years later, at the insistence of his friend, dance impresario Lincoln Kirstein, did he return to it. He finished the work, titled *Soaring*, in 1950; it was exhibited at Robert Macbeth's gallery that same year.

By 1945, NC—then 63 and shaken by World War II and what he called "the lurid threads of the world's dementia"—was losing confidence in himself as a painter. He became moody and depressed. Brightening his colors and flirting with different styles didn't seem to help. He became more and more dependent on Andrew, relying on him for encouragement and support.

On the morning of October 19, 1945, NC was on an outing with his namesake, 3-year-old Newell Convers Wyeth, the child of his oldest son, Nathaniel. At a railroad crossing by the farm of a neighbor, Karl Kuerner, the car NC was driving stopped while straddling the tracks—no one knows why. A mail train from Philadelphia plowed into it, killing NC instantly and hurling little Newell onto the cinder embankment. He died of a broken neck.

After that, Andrew's work became deeper, more serious, more intense. "It gave me a reason to paint, an emotional reason," he has said. "I think it made me." One day, walking close to the tracks where his father was killed, he spotted Allan Lynch, a local boy, running down the hill facing the Kuerner farm. Wyeth joined him. The two found an old baby carriage, climbed into it together, and rolled down the hill, both of them laughing hysterically. The incident

ANDREW WYETH / COLLECTION OF ANDREW AND BETSY WYETH

ANDREW WYETH / THE ARMAND HAMMER MUSEUM OF ART AND CULTURE CENTER, UCLA

In 1986 Wyeth revealed the existence of 246 drawings and paintings of his married neighbor Helga Testorf.

inspired Wyeth's 1946 painting *Winter*, which depicts Lynch running down the hill, chased by his shadow. "The boy was me at a loss, really," he told Meryman. "His hand, drifting in the air, was my hand, groping, my free soul."

In the painting, the hill is rendered with tiny, meticulous, but also strangely unpredictable, strokes, anticipating the hill that Wyeth would portray two years later in *Christina's World*. In *Winter*, Wyeth has said, the hill became the body of his father. He could almost feel it breathe.

In 1950, two years after he painted *Christina's World*, Wyeth was diagnosed with bronchiectasis, a potentially fatal disease of the bronchial tubes. Most of a lung had to be removed. During the operation, Wyeth's heart began to fail, and he later reported having had a vision in which he saw one of his artistic heroes, the 15th-century painter Albrecht Dürer, walk toward him with his hand extended, as if summoning him. In his vision, Wyeth started toward his hero, and then pulled back as Dürer withdrew.

The operation severed the muscles in Wyeth's shoulder, and although he eventually recovered, it was unclear for a time whether he would paint again. During weeks of recuperation, he took long walks through the winter fields, wearing a pair of old boots that had once belonged to artist Howard Pyle, his father's teacher and mentor.

Wyeth said he had been working on the Helga series in secret for 15 years, apparently unbeknown even to his wife, Betsy. *Day Dream* (above), 1980, is a composite of Helga and two other models. "The paintings are remarkable," Betsy told *Time*.

Trodden Weed (opposite), which Wyeth painted several weeks after the surgery—his hand supported by a sling suspended from the ceiling—depicts a pair of French cavalier boots in full stride across a landscape. The painting is both a kind of self-portrait and a meditation on the precariousness of life. Wyeth has said that the painting reflects a collection of highly personal feelings and memories—of the charismatic Pyle, whose work greatly influenced both Wyeth and his father, of Wyeth's childhood, when he dressed up as characters from NC's and Pyle's illustrations, and of the vision of death as it appeared to him in the figure of Dürer, striding confidently across the landscape.

By the time of his rehabilitation, Wyeth had achieved a signature look and a distinctive personal approach, finding nearly all of his subjects within a mile or so of the two towns in which he lived—Chadds Ford, where he still spends winters, and Cushing, Maine, where he goes in the summer. "I paint the things I know best," he has said. Many of his most

memorable paintings of the 1960s and '70s, in fact, focus on just two subjects—the Kuerner farm in Chadds Ford (owned by German immigrant Karl Kuerner and his mentally unbalanced wife, Anna) and the Olson house in Cushing, inhabited by crippled Christina and her brother, Alvaro.

DURING THE 1940S and '50s, Wyeth was encouraged by two notable supporters of the avant-garde, Alfred Barr, the founding director of New York's Museum of Modern Art, who purchased, and promoted, *Christina's World*, and painter and art critic Elaine de Kooning, the wife of renowned Abstract Expressionist Willem de Kooning.

In 1950, writing in *ARTnews*, Elaine de Kooning praised Wyeth as a "master of the magic-realist technique." Without "tricks of technique, sentiment or obvious symbolism," she wrote, "Wyeth, through his use of perspective, can make a prosperous farmhouse kitchen, or a rolling pasture as bleak and haunting as a train whistle in the night." That same year, Wyeth was lauded, along with Jackson Pollock, in *Time* and *ARTnews*, as one of the greatest American artists. But as the battle lines between realism and abstraction were drawn more rigidly in the mid-1960s, he was increasingly castigated as old-fashioned, rural, reactionary and sentimental. The 1965 ordination of Wyeth by *Life* magazine as "America's preeminent artist" made him an even larger target. "The writers who were defending abstraction," says the Philadelphia Museum's Kathleen Foster, "needed someone to attack." Envy may also have played a part. In 1959 Wyeth sold his painting *Groundhog Day* to the Philadelphia Museum for $31,000, the largest sum that a museum had ever paid for a work by a living American painter; three years later he set another record when he sold *That Gentleman* to the Dallas Museum of Art for $58,000.

Throughout the 1970s and '80s, Wyeth kept up a steady stream of major paintings—landscapes of fir trees and glacial boulders, studies of an 18th-century mill in Chadds Ford and, above all, likenesses of people he knew well, such as his longtime friend Maine fisherman Walt Anderson and his Pennsylvania neighbors Jimmy and Johnny Lynch.

Then, in 1986, Wyeth revealed the existence of 246 sketches, studies, drawings and paintings (many of them sensuous nudes) of his married neighbor, Helga Testorf, who was 22 years his junior. He also let it be known that he had been working on the paintings for 15 years, apparently unbeknown even to his wife. (For her part, Betsy didn't seem entirely surprised. "He doesn't pry in my life and I don't pry in his," she said at the time.) The revelation—many found it hard to believe that the artist could have produced so many portraits without his wife's knowledge—thrust the works onto the covers of both *Time* and *Newsweek*. The story's hold on the popular imagination, wrote Richard Corliss in *Time*, "proved that Wyeth is still the one artist whose style and personality can tantalize America." An exhibition of the works at the National Gallery of Art in Washington, D.C. followed ten months later. But the revelation was also seen as a hoax and publicity stunt. In his 1997 book *American Visions*, for example, *Time* art critic Robert Hughes denounced the way the Helga pictures came to light as a "masterpiece of art-world hype."

This past April, NBC News' Jamie Gangel asked Wyeth why he had kept the paintings secret. "Because I'd been painting houses, barns, and, all of a sudden, I saw this girl, and I said, 'My God, if I can get her to pose, she personifies everything I feel, and that's it. I'm not going to tell anyone about this, I'm going to just paint it.'

"I'm shocked when I see my early work," says Wyeth. "You think you're developing and getting better and then you see something you did years ago. . . . sometimes it has a depth that surprises you." *Groundhog Day* (below) was painted in 1959.

ANDREW WYETH / PHILADELPHIA MUSEUM OF ART. GIFT OF HENRY F. DU PONT AND MRS. JOHN WINTERSTEEN

"Wyeth's subjects give shape to his own desires, fantasies, longings, tragedies and triumphs," says curator Knutson.

People said, 'Well, you're having sex.' Like hell I was. I was painting. And it took all my energy to paint." Wyeth went on to say that he still paints Helga once in a while. "She's in my studio in and out. Sort of an apparition."

In any case, many in the New York art world seized upon the Helga paintings as confirmation of their belief that Wyeth was more cultural phenomenon than serious artist. Even today, when realism has come back in vogue, hostility to Wyeth's work remains unusually personal. Former MoMA curator Robert Storr said in the October 2005 issue of *ARTnews* that Wyeth's art is "a very contrived version of what is true about simple Americans. . . . I was born in Maine. I know these people and I know. Nothing about Wyeth is honest. He always goes back to that manicured desolation. . . . He's so averse to color, to allowing real air—the breath of nature—into his pictures." In the same article, art critic Dave Hickey called Wyeth's work "dead as a board." Defenders are hard put to explain the virulence of the anti-Wyeth attacks. "The criticism doesn't engage with the work at all," says curator Knutson. "It is not persuasive."

Wyeth's affinity for secret, personal metaphors is evident in his 1996 *Airborne* (above). In it, the Wyeth house on Benner Island, Maine, represents the organized Betsy, who designed it. The explosion of feathers stands for Wyeth's rebellion to structure.

The current exhibition, she says, has tried to probe into Wyeth's creative process by looking at the way he has handled recurrent themes over time. She notes that he tends to paint three subjects: still-life vignettes, vessels (such as empty buckets and baskets), and thresholds (views through windows and mysterious half-opened doors). All three, she says, serve Wyeth as metaphors for the fragility of life. In Wyeth's paintings, she adds, "you always have the sense that there is something deeper going on. The paintings resonate with his highly personal symbolism."

The artist's brother-in-law, painter Peter Hurd, Knutson writes, once observed that NC Wyeth taught his stu-

ANDREW WYETH / COLLECTION OF ANDREW AND BETSY WYETH

dents "to equate [themselves] with the object, become the very object itself." Andrew Wyeth, she explains, "sometimes identifies with or even embodies the objects or figures he portrays." His subjects "give shape to his own desires, fantasies, longings, tragedies and triumphs." In a similar way, objects in Wyeth's work often stand in for their owners. A gun or a rack of caribou antlers evokes Karl Kuerner; an abandoned boat is meant to represent Wyeth's Maine neighbor, fisherman Henry Teel. Studies for Wyeth's 1976 portrait of his friend Walt Anderson, titled *The Duel*, include renderings of the man himself. But the final painting contains only a boulder and two oars from Walt's boat. "I think it's what you take out of a picture that counts," the artist says. "There's a residue. An invisible shadow."

Wyeth also says that "intensity—painting emotion into objects," is what he cares about most. His 1959 painting *Groundhog Day* (p. 90), for instance, appears to portray a cozy country kitchen. Only gradually does the viewer become aware that there's something off, something uncomfortable, strangely surreal, about the painting. The only cutlery on the table is a knife. Outside the window, a barbed-wire fence and jagged log wrapped in a chain dominate the landscape. As Kathleen Foster notes in her catalog essay, the painting adds up to a portrait of Wyeth's neighbor, the volatile, gun-loving Karl Kuerner, and his troubled wife, Anna. Far from cozy, the painting suggests the violence and even madness that often simmers beneath the surface of daily life.

"I get letters from people about my work," says Wyeth (above, at 78, in 1995). "The thing that pleases me most is that my work touches their feelings. In fact, they don't talk about the paintings. They end up telling me the story of their life."

WHILE SEEMINGLY "real," many of Wyeth's people, places and objects are actually complex composites. In *Christina's World*, for example, only Olson's hands and arms are represented. The body is Betsy's, the hair belongs to one of the artist's aunts, and Christina's shoe is one he found in an abandoned house. And while Wyeth is sometimes praised—and criticized—for painting every blade of grass, the grass of *Christina's World* disappears, upon examination, in a welter of expressive, abstract brushstrokes. "That field is closer to Jackson Pollock than most people would like to admit," says Princeton professor John Wilmerding, who wrote the introduction to the exhibition catalog.

Wyeth "puts things in a mental blender and comes out with something unique," says Chris Crosman, who worked closely with the Wyeths when he was director of the Farnsworth Museum in Maine. "A lot of it is based on what he sees around him, but when he gets down to painting he combines different places and perspectives. His paintings are as individual and personal as any artworks that have ever been created."

Artist Mark Rothko, renowned for his luminous abstract canvases, once said that Wyeth's work is "about the pursuit of strangeness." As Wyeth has aged, his art has grown only stranger, as well as more surreal and personal. *Breakup* (1994) depicts the artist's hands springing from a block of ice; *Omen* (1997) pictures a naked woman running across a barren landscape while a comet streaks across the sky. And one of Wyeth's most blackly humorous paintings, *Snow Hill* (1989), depicts several of his favorite models, including Karl and Anna Kuerner and Helga Testorf, dancing around a maypole, celebrating the artist's death.

"It's a shock for me to go through and see all those years of painting my life," Wyeth says of the current show. "When I made these paintings, I was lost in trying to capture these moments and emotions that were taking place. It's a very difficult thing for an artist to look back at his work. If it's personal, it touches all these emotions."

SHOULD WE CONSIDER Wyeth old-fashioned or modern? Perhaps a little of both. While he retains recognizable imagery, and while his work echoes great American realists of the 19th-century, such as Thomas Eakins and Winslow Homer, the bold compositions of his paintings, his richly textured brushwork, his somber palette and dark, even anguished spirit, suggest the work of the Abstract Expressionists.

One of the goals of this exhibition, says Kathleen Foster, "has been to put Wyeth back into the context of the 20th century, so people can see him as a contemporary of the Surrealists, and a colleague of the Abstract Expressionists—artists whose work he admires and feels kinship with. . . . People have pigeonholed Wyeth as a realist, a virtuoso draftsman, almost like a camera recording his world, and we want to demonstrate that realism is only the beginning of his method, which is so much more fantastic and artful and memory-based than people may have realized. And strange." And what does Wyeth think of his place in the contemporary art world? "I think there is a sea change," he says. "I really do. It's subtle, but it's happening. Lincoln Kirstein wrote me several times saying: 'You just keep on. You're way ahead.' I like to think that I'm so far behind that I'm ahead."

PETER RALSTON

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Since Berliners toppled the wall (in November 1989, opposite), construction has reshaped the city (high-rises dot Potsdamer Platz). Residents share a passion for urban planning; as a result, says American expatriate Susan Neiman, "ideas make a concrete difference in real life."

Beyond the Wall Berlin

Nearly 17 years after the wall came down, Berliners are still trying to escape its shadow

BY TOM MUELLER

PHOTOGRAPHS BY SCOTT S. WARREN

THE BERLIN MORNING was gray and drizzly, October 3, 2005, and the thin crowds milling outside the Brandenburg Gate were in no mood to celebrate the 15th annual Day of German Unity. Recent news suggested why: unemployment and the budget deficit were soaring, consumer confidence and birthrates were plunging, and economic growth was dismally flat. Berlin itself seemed to underscore the failure of the country's reunification: over the past 15 years unemployment in the city had doubled to 20 percent, and civic debt had grown fivefold to a crushing $68 billion. Germany's general elections 15 days before, widely expected to produce a new chancellor and fresh emphasis on economic and social reforms, had instead ended in a deadlock with the existing government, suggesting that the Germans feared the cure as much as the disease.

Even the October date was wrong. The real red-letter day had been November 9, 1989, when the Berlin Wall was first breached. I had been in Berlin that day and had seen a very different celebration. Citizens of the two hostile states had walked arm in arm like wide-eyed dreamers along the 200-yard stretch between the bullet-riddled Reichstag in the West and the smog-blackened Brandenburg Gate in the East. Berliners had danced on the hated wall, weeping openly and chanting, "We are one people!" Now the crowd was listless, the Reichstag and the Brandenburg Gate, recently restored, shone pearly-white. And between them the wall might never have existed.

Only when I began to search for some trace of it did I notice a line of bricks at my feet. This, evidently, was where the 26-mile barrier, Berlin's blight for 28 years, had stood. As I started walking south along the wall line, the bricks zigzagged under the currywurst stands and marionette stalls of the reunification festival, slipped beneath the traffic on Ebertstrasse, and sliced through the new skyscrapers in Potsdamer Platz—the huge square that had been one of Berlin's gems before Allied bombing in World War II turned much of it to rubble, and before the wall made it a no man's land. Here, 30 minutes into my walk, I passed four concrete slabs, the first pieces of the actual wall I had seen. Painters had festooned them with naif figures and cherry-red hearts, making them look more like found art than the remains of a deadly barrier.

It wasn't until the line of bricks left the tumult of Potsdamer Platz and turned onto the silent Niederkirchnerstrasse that the dreaded structure began to assert itself. A stretch of the wall rose up from the bricks, iron gray and some 13 feet tall, its rounded top designed to foil grappling hooks. This stretch of wall, a sign said, bordered the former Gestapo headquarters and prison complex at Prinz Albrechtstrasse 8, once the most feared address in Berlin. The headquarters had been demolished in the mid-1950s, but in 1986, when the area was excavated in preparation for redevelopment, parts of the Gestapo's underground torture chambers came to light.

The city's Nazi past haunts Berliners (November 9, 1938: at left, mobs destroyed Jewish businesses and synagogues on Kristallnacht, "the night of broken glass"). In 1986, excavations revealed underground Gestapo torture chambers (the site, below, contains a photographic memorial to those who died there; behind the exhibit rises a stretch of the Berlin Wall).

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TOP: BETTMANN / CORBIS; P. 95 REGIS BOSSU / SYGMA / CORBIS; P. 97 TOP: MICHAEL URBAN / AFP / GETTY IMAGES

West Berliners hurried to the site, and it became an open-air memorial to the horrors of the Nazi regime. Today, the cell walls contain photographs of the murdered: Communists, artists, gypsies, homosexuals and, of course, Jews. In one photo, a Jewish shopkeeper swept debris from the pavement in front of his plundered store, on the morning after Kristallnacht, "the night of broken glass," when gangs of young Nazis marauded through Berlin's Jewish neighborhoods on November 9, 1938.

Now it was clear why Berliners did not commemorate the wall's collapse on the day it fell: November 9 had been permanently tainted by Kristallnacht, just as this vacant lot in the heart of the city had been poisoned by its history, and was now as unusable as the radioactive farmlands of Chernobyl.

Berlin is a palimpsest of old guilt and new hope, where even a cityscape you think you know well can suddenly reveal its opposite. "Beware Berlin's green spaces!" local author Heinz Knobloch once wrote: parks and playgrounds still rest on air-raid bunkers too massive to destroy. Companies that contributed to the Holocaust still operate: DeGussa AG, manufacturer of the anti-graffiti coating applied to Berlin's recently inaugurated Holocaust Memorial, also made the Zyklon B poison used in death-camp gas chambers.

As Berlin has done several times in its long history, the city is rebuilding itself, at Potsdamer Platz in avant-garde shapes of glass and steel, and elsewhere in new social structures, communities of artists and intellectuals where life seems as freewheeling as a traveling circus. There is a roominess here that no other European capital can match—Berlin is nine times larger in acreage than Paris, with less than one third of the population—and an infectious sense of anything goes.

By 1989, West Berlin was spending some $365 million a year on culture, more than the U.S. government spent on culture for the entire United States. Most of the beneficiaries of this civic largesse survived reunification; today Berlin boasts 3 world-class opera houses, 7 symphony orchestras, 175 museums, 1,800 art galleries and 2 zoos with more wild animals than any city in the world.

The city is still finding its identity and is a place of almost impossible contradictions: fixated with the past yet impatiently pursuing the future, impoverished yet artistically rich, a former capital of dictatorship and repression that has be-

Even as the city's landmarks are restored (the refurbished Brandenburg Gate, below), vestiges of the wall are fast disappearing (although in some places, a plaque marks its location, above). In 1981, Berlin novelist Peter Schneider wrote prophetically: "It will take us longer to tear down the *Mauer im Kopf* ('Wall in the head') than any wrecking company will need to remove the Wall we can see."

Most artists (including Christian Awe, above, and Ping Qiu, below) live in the East, where studio space, by the standards of other European capitals, is still inexpensive. Awe was born in East Berlin and was 11 when the barrier fell. "Back then the aim was to excel for your community, your school, your group, not individual achievement," he says. "Today you must be the best, first, greatest."

come a homeland of social freedom. But more than anything, Berlin is filled with—obsessed with—reminders of its history.

THE WALL was never a single barrier but three separate ramparts, sealing off a no man's land of guard towers, patrol roads and razor wire known as the Todesstreifen, or "Death Strip," which in places was hundreds of yards wide. Since reunification, the Death Strip has grown a varied crop. Back in Potsdamer Platz, the strip sprouted the cranes and buildings of a 300-acre, $5 billion business and entertainment complex. Only a 20-minute walk away, the Death Strip has become a green belt of parks and overgrown lots that feel like the countryside. The brick line faltered and disappeared, and I continued tracking the wall with the help of my city map, which marked its path in pale gray. I was often unsure whether I was in East or West Berlin. Near the Spree River, 40 minutes from Potsdamer Platz, the fields became still wider and wilder. Squatter communities have grown up, neat, ingeniously jury-rigged dwellings that ring to the sound of power tools and folk music and produce the scent of grilling meat.

Wall-hunting for the rest of the day, I found new life in old ruins along its route: a public sauna and swimming area in an abandoned glass factory, a dis-

cothèque in a former Death Strip guard tower, a train station converted into an art museum. But the telltale distinctions between East and West endure. The "walk" and "don't walk" signs remain unchanged since reunification: while the stick figures of the West resemble those of other European capitals, in the former East Berlin the little green man wears a broad-brimmed hat and steps out jauntily, and his red alter ego stands with arms flung wide like the Jesus of Rio. Most buildings are still oriented to the now-invisible barrier: major roads parallel it, with the few cross-wall interconnections still freshly paved. Even footpaths run along the Death Strip. It takes more than a handful of years to remap 26 miles of cityscape, and to change the habits of a lifetime.

Night had fallen by the time I returned to the party at the Brandenburg Gate. People had drunk copious quantities of beer since morning but had grown no merrier. Berliners had lived with the wall for three generations and could not be expected to forget it as easily as one shakes off a nightmare. During the cold war, doctors had identified a range of anxieties and phobias they called *Mauerkrankheit* ("wall sickness") on both sides of the divide, and suicide in West Berlin was twice as frequent as in other West German cities. How deeply in the minds of most Berliners do the wall's foundations still lie?

THE CROWD FELL SILENT as a Chinese woman in a white silk gown raised a cleaver and slammed it down on the dark brown hand resting on the table before her, severing the index finger. With fierce chops she amputated the other digits and put them on a plate, which she passed among the applauding onlookers. I took the beautifully shaped thumb and bit off a chunk. The dark chocolate was delicious.

This is DNA, one of the many galleries on the Auguststrasse, heart of Berlin's flourishing contemporary art scene, where most facades have just been restored, but World War II bullet holes and bombed-out lots still lend a certain edginess. DNA's art is vintage Berlin: quirky, theatrical and as dark as the edible hand-sculptures by Ping Qiu.

Some 1,500 cultural events take place each day in Berlin, thanks to artists like Ping Qiu and her DNA colleagues, who live and make art in the uninhabited buildings in the former eastern sector that are inconceivably large, cheap and central by the standards of any other European capital. They have studios in disused hat factories and industrial bakeries, and hold exhibitions in the numerous air-raid bunkers that still dot the Berlin subsoil. In fact, by splitting the city into two independent halves that actively financed their own venues, the wall fostered Berlin's culture long before it fell.

The post-wall construction boom has also brought many of the world's leading architects to Berlin. The city's residents are deeply involved in this reconstruction process. "You could spend 300 days a year in public discussion about urban planning," says Michael S. Cullen, a building historian and the world's leading authority on the Reichstag, who has lived in Berlin since 1964. The attention to art and architecture is what many residents love best about their city. "Berlin is one of the few places I know where ideas can make a concrete difference in daily life," says philosopher Susan Neiman, head of a think tank, the Einstein Forum.

The wall has also molded Berlin's populace. The wall caused a sudden labor shortage in both halves of the city when it was erected in 1961, and invited substitute workers poured in. (West Berlin drew from Turkey and other Mediterranean countries; East Berlin from North Vietnam, Cuba and other Communist nations.) People from more than 180 nations live in Berlin. And since the wall fell, tens of thousands of Jewish immigrants—drawn by Berlin's security, cosmopolitanism, low rents and the incentives the reunited city has extended to all Jews and their descendants displaced by the Holocaust—have streamed to Berlin, most from the former Soviet Union. Yiddish theaters and kosher restaurants thrive in the city, and the mournful sounds of klezmer music can be heard again in the streets after a silence of 70 years.

Today many of Berlin's Jews live in Russian-speaking enclaves cut off from mainstream society. Periodic acts of anti-Semitism by small but vociferous groups of right-wing extremists have further emphasized the isolation, as have the resulting 24-hour police guards at Jewish community centers and synagogues with their imposing security walls.

Ingo Schulze, one of Germany's preeminent novelists, believes that Berlin's capitalist ethos has gone too far: "It's good to encourage a competitive spirit, but not at the expense of the common good."

Many members of Berlin's 150,000-strong Turkish community live in ethnic ghettos with hardly a word of German. The insularity of Berlin's Muslims has been highlighted of late by a string of six so-called "honor killings" of Muslim women by relatives who believed the victims' Western lifestyles had stained their families' honor. Sarmad Hussain, a German-born Muslim who is a parliamentary adviser in Berlin, says the city's version of multiculturalism is less melting pot than a relatively benign form of apartheid. "We in Berlin," he says, "should benefit from all this diversity." But with most ethnic groups sticking to themselves, he adds: "We don't."

Once the head of East Germany's secret police, Markus Wolf (in front of a statue of Marx and Engels) admits the Communist state "failed to live up to its ideals," but he defends its "vision of a more just society."

BACK IN 1981, when the wall seemed eternal, Berlin novelist Peter Schneider observed how fundamentally the two opposing social systems of East and West had shaped their citizens, and mused on the enormous difficulties that any attempt at reunification would meet. "It will take us longer to tear down the *Mauer im Kopf* ('Wall in the head')," he wrote, "than any wrecking company will need to remove the Wall we can see." Schneider's words proved prophetic. Berlin's greatest challenge lies within: to unite those two radically different races of Berliners who, on the night of November 9, 1989, were magically converted—at least on paper—from bitter enemies to compatriots.

Like the traces of the wall itself, the differences between *Ossi* (East Berliners) and *Wessi* (West Berliners) have faded. "At first you could recognize the Ossis easily from their marble-washed jeans straight from Siberia or China," says Michael Cullen. "But even today I can usually recognize them by their clothes, comportment, posture and their slightly downtrodden air." Also, the two groups shop at different stores, smoke different brands of cigarettes, vote for different political parties and read different newspapers—Ossis, their beloved *Berliner Zeitung*, Wessis, the *Tagespiegel* and *Berliner Morgenpost*. By and large they have remained in their original neighborhoods. Ossis are frequently paid less and required to work more hours in the same job, and are more likely to be unemployed.

All the strains of cold war Europe and of divided Germany were concentrated in one city, along the fault line of the wall, where rival geopolitical systems ground together with tectonic force. On both sides, the reaction was negation. West Germany never recognized East Germany as a nation, nor the wall as a legal border. Eastern maps of Berlin depicted the city beyond the wall as a featureless void, without streets or buildings. Each side built a city in its own image: East Berlin erected towering statues to Marxist heroes and raised signature socialist buildings such as the Palast der Republik, the parliament headquarters. (Demolition was begun earlier this year to make way for a replica of a castle that stood on the spot until 1950.) West Berlin built temples to capitalism on the glittering Kurfürstendamm, such as the Europa Center office tower crowned by a revolving Mercedes emblem.

When the East finally imploded, Wessis filled the vacuum with a speed and thoroughness that, to many easterners, smacked of colonization, even conquest. In Berlin, this process was particularly graphic. Westerners took over top posts in East Berlin's hospitals and universities, imposed western taxes and laws and introduced western textbooks in schools. Streets and squares once named for Marxist heroes were rebaptized, socialist statues were toppled and iconic buildings of East Berlin were condemned and demolished. Along the wall, the monuments to fallen border guards were swiftly removed. But West Berlin's buildings and monuments still stand. So do the memorials along the wall to the 150 East Germans killed while trying to escape to the other side. Easterners these days have little choice but to acknowledge the existence of the West. Westerners still appear bent on denying that East Berlin ever was.

Yet the Ossis are still here. As the architectural symbols of East Berlin have fallen to the wrecking ball, the Ossis have protested, sometimes with a force that betrays the tensions in this schizophrenic city. And Ossis of radically different backgrounds frequently express mistrust of the values of modern-day Berlin, a city whose

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future they feel powerless to shape. "Unfortunately, East Germany failed utterly to live up to its ideals," said Markus Wolf, the 82-year-old former head of the dreaded Stasi, East Germany's secret state police. "But for all the shadowy sides, we had a vision of a more just society, an aim of solidarity, trustworthiness, loyalty and friendship. These public ideals are absent today." For me, his words had the ring of apparatchik rhetoric until I heard them again from Wolf's polar opposite. "It's good to encourage a competitive spirit, but not at the expense of the common good," said 43-year-old novelist Ingo Schulze, one of Germany's foremost writers, whose books are steeped in the sorrow and disorientation that the Stasi and other organs of state repression helped to create. "Obviously, I'm happy that the wall is gone, but that doesn't mean we're living in the best of all possible worlds." Christian Awe, one of the artists I met at DNA, was 11 when the wall fell, so his memories of East Berlin are less political and more personal. "Back then the aim was to excel for your community, your school, your group, not purely for individual achievement. Today you must be the best, first, greatest, get the best job, have as many lovers as you can."

Since 2001, the Jewish Museum Berlin, designed by American architect Daniel Libeskind, has drawn some three million visitors to a structure commemorating a people the city once sought to annihilate.

These are the voices of a lost Berlin, citizens of a city that vanished the night the wall fell, who are still searching for a homeland. They speak of great gains but also of a loss that is central to life in Berlin, where on the surface the past can be swept away in a handful of years, but whose foundations lie as deep and immovable as a bunker.

As the last fragments of the wall are torn down or weather away, a few leading Berliners have proposed erecting a new memorial on Bernauerstrasse, in north-central Berlin. Perhaps the time has come for such a thing. "We want to make an attempt, within the limits of the possible, to reconstruct a couple hundred meters of the wall," Berlin mayor Klaus Wowereit told me, "so that one can get a little bit of an idea of it."

Few of Wowereit's fellow citizens support his plan, however. Most Ossis and Wessis, for all their differences, were overjoyed at the wall's obliteration and still feel that it deserves no commemoration. Yet oddly, the explanations they usually give for opposing a memorial are mistaken. Most say the wall could never have been preserved, because it was swept away by the jubilant, hammer-wielding hordes shortly after November 9, 1989. In fact, the bulk of the demolition was done later, by 300 East German border police and 600 West German soldiers, working with bulldozers, backhoes and cranes; it was not a spontaneous act of self-liberation, therefore, but a joint project of two states. With a similar slip of memory, many Berliners say the wall is unworthy of remembrance because it was imposed on them by the Russians. Actually, East German leaders lobbied Khrushchev for years to let them build the wall, and it was Germans who manned the guard towers, Germans who shot to kill. If Berliners don't want a wall memorial, perhaps they still can't see the wall for what it truly was.

When the few proponents of a memorial describe what it would mean, they reveal the most pernicious misconception of all. "The central aim will be to commemorate the victims of the wall and the division of Berlin," Mayor Wowereit said, "particularly those people who died during attempts to escape, and fell victim to the repressive structure of the dictatorship." Yet surely a wall memorial would also commemorate the millions who never approached the barrier, and went about their cramped lives amid the soft-coal fogs and swirling suspicions of East Germany. It would remind Berliners not to deny but to accept their former divisions, perhaps even celebrate the diversity that the wall, paradoxically, has wrought. And it would warn against the longing for a monolithic unity that many Germans now feel, a longing that in the past has led to some of the darkest moments in their history. When Berliners can build such a memorial to their wall—without victors or vanquished, without scapegoats—they may also be able to see the present with a stranger's eyes, recognizing not only the hardships of the past tumultuous 15 years but also the remarkable new city they are building.

STEFAN MÜLLER

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Cape Cod Morning will be on view at the Smithsonian American Art Museum when it celebrates its grand opening along with the National Portrait Gallery on July 1.
Cape Cod Morning, (Detail) Edward Hopper, 1950, Oil on canvas, Smithsonian American Art Museum

TIME AND AGAIN

In 1984, Peter Feldstein set out to photograph every last person in Oxford, Iowa. Two decades later, he's doing it again, creating a unique portrait of heartland America

PHOTOGRAPHS BY PETER FELDSTEIN
TEXT BY STEPHEN G. BLOOM

ONE SWELTERING summer day in 1984 my friend Peter Feldstein walked up and down the streets of Oxford, Iowa, posting fliers announcing he would take anyone's picture, free. At the time, 676 people lived in Oxford, and he wanted to make a photograph of every single one of them.

He set up a makeshift studio in an empty storefront across the street from where he lived. The first day, nobody showed up. Then some elementary-school students came by, then a retired couple, then a few more folks. After Peter photographed Al Sheets, a member of the local American Legion chapter, Sheets returned with 75 legionnaires and their families, and Peter's project took off.

He asked people to dress as they would on a typical Saturday afternoon. Clarence Schropp wore his wife's wig, and Calvin Colony brought his 300-pound pet lion, but mostly people were, well, themselves. Over three months, Peter photographed 670 people—a unique portrait of an American town, as comprehensive as any ever attempted.

Peter exhibited the pictures at the Legion hall in Oxford, and that was that. He filed the negatives away in a metal cabinet and went on teaching photography at the University of Iowa.

Last year, I suggested to Peter that he photograph the same people. Of course, many had died and some had moved away in the intervening 21 years. But most still live in Oxford. At last count, he had photographed more than 100 of them.

Peter didn't pose them or even show them their original pictures. Yet Mary Ann Carter still tilted her head to the left, her hands cupped neatly at her side. Jim Jiras still wore his seed cap angled to the right. Pat Henkelman still leaned slightly to the left. Tim and Mike Hennes clasped their hands just the way they did before.

Many of the Oxfordians today are shorter or heavier or

Residents of Oxford, Iowa, in 1984 . . .

FIRST ROW, LEFT TO RIGHT

Amber Barker

Jim Hoyt, mail carrier

Hunter Tandy

Iowa Honn, schoolteacher

SECOND ROW

John Honn, carpenter

Mary Ann Becicka

Joe Prymek, roofer

Kevin Hackathorn, foreman

THIRD ROW

Joe Booth, livestock salesman

Pat Henkelman, homemaker

Stephanie Stratton

Tim Hennes, student

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both. Some are stooped. Several cannot walk or breathe unassisted. Teeth are missing. At least three farmers have lost fingers. Electric smiles have dimmed. But there are also men and women in the radiance of life, exuberant, just coming into their prime.

Peter invited me to work with him. "Ask Oxford people to share their stories with you," he said. By now I've conducted dozens of interviews. Some people talk about religion, others about relationships gone bad. Some break down in tears, recalling incidents they had not, or rarely, acknowledged before. There is a great deal of courage in what people say. The language of not just a few is pure poetry.

"My father said I was the most beautiful baby in the most beautiful state, so he named me Iowa," said Iowa Honn, who was born in Oxford in 1910. "I met my husband in kindergarten."

"I'm the last living of the first four American soldiers who liberated Buchenwald concentration camp," Jim Hoyt said. "Seeing these things, it changes you. I was a kid. Des Moines had been the farthest I'd ever been from home."

"I'd love to travel Route 66, see New York City, Vegas, maybe Alaska," said Tim Hennes, recalling an abandoned plan to attend college in Hawaii. "Sometimes I feel like George Bailey, the Jimmy Stewart character in *It's a Wonderful Life*. That trip to Hawaii was my ticket out."

"I hope Oxford is my home forever," Mindy Portwood says. "My family is my world. My brothers, my sister, my parents are my best friends."

Oxford is only 16 miles from Iowa City, home of the University of Iowa and some 62,000 people, but it might as well be 1,000 miles. Founded in 1868, Oxford was originally a mail stop for stagecoaches and, later, trains. The name, suggested by a transplant from Oxford Township, New York, was pulled out of a hat. By 1880, Oxford boasted 891 residents, five general stores, one grocery store, three hardware stores, two drugstores, three hat stores, three hotels, three churches, two newspapers, two undertakers, three physicians, one dentist, four blacksmiths, three shoemakers and six saloons. Oxford even had an opera house. On September 18, 1948, a train carrying President Harry Truman pulled into town and he gave a five-minute speech—part of his whistle-stop campaign to defeat Republican challenger Thomas E. Dewey.

Oxford's mayor, Don Saxton, says the town's glory days are pretty much gone. There's a Ford dealership, a bank, two beauty shops, a veterinarian, three saloons (if you count the American Legion hall) and one restaurant, which opens just for dinner. Oxford's population is now 705, an increase of 29 in the years since Peter began documenting the town. Two decades is a long time. Or is it? People change. Or do they? Peter's time-lapse photographs pose those questions, and they remind us of who we dreamed we would become and who we turned out to be.

STEPHEN G. BLOOM *teaches journalism at the University of Iowa. Photographer* **PETER FELDSTEIN** *lives in Oxford, Iowa.*

. . . and again in 2005

FIRST ROW, LEFT TO RIGHT

Amber Barker Carroll, hairdresser

Jim Hoyt, retired

Hunter Tandy, building contractor

Iowa Honn, retired

SECOND ROW

John Honn, Pentecostal minister

Mary Ann Storck, factory worker

Joe Prymek, tire dealer

Kevin Hackathorn, maintenance superintendent

THIRD ROW

Joe Booth, lumberyard worker

Pat Henkelman homemaker

Stephanie Stratton, waitress

Tim Hennes, building inspector

BY JAMES CARROLL

From the writing of the New Testament to the filming of *The Da Vinci Code*, her image has been repeatedly conscripted, contorted and contradicted. But through it all, one question has gone largely unanswered:

Who Was Mary Magdalene?

THE WHOLE HISTORY OF WESTERN CIVILIZATION is epitomized in the cult of Mary Magdalene. For many centuries the most obsessively revered of saints, this woman became the embodiment of Christian devotion, which was defined as repentance. Yet she was only elusively identified in Scripture, and has thus served as a scrim onto which a succession of fantasies has been projected. In one age after another her image was reinvented, from prostitute to sibyl to mystic to celibate nun to passive helpmeet to feminist icon to the matriarch of divinity's secret dynasty. How the past is remembered, how sexual desire is domesticated, how men and women negotiate their separate impulses; how power inevitably seeks sanctification, how tradition becomes authoritative, how revolutions are co-opted; how fallibility is reckoned with, and how sweet devotion can be made to serve violent domination—all these cultural questions helped shape the story of the woman who befriended Jesus of Nazareth.

Who was she? From the New Testament, one can conclude that Mary of Magdala (her hometown, a village on the shore of the Sea of Galilee) was a leading figure among those attracted to Jesus. When the men in that company abandoned him at the hour of mortal danger, Mary of Magdala was one of the women who stayed with him, even to the Crucifixion. She was present at the tomb, the first person to whom Jesus appeared after his resurrection and the first to preach the "Good News" of that miracle. These are among the few specific assertions made about Mary Magdalene in the Gospels. From other texts of the early Christian era, it seems that her status as an "apostle," in the years after Jesus' death, rivaled even that of Peter. This prominence derived from the intimacy of her relationship with Jesus, which, according to some accounts, had a physical aspect that included kissing. Beginning with the threads of these few statements in the earliest Christian records, dating to the first through third centuries, an elaborate tapestry was woven, leading to a portrait of St. Mary Magdalene in which the most consequential note—that she was a repentant prostitute—is almost certainly untrue. On that false note hangs the dual use to which her legend has been put ever since: discrediting sexuality in general and disempowering women in particular.

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The Gospel of John names Mary as the first witness to the Resurrection (painted by Federico Barocci, 1590).

Confusions attached to Mary Magdalene's character were compounded across time as her image was conscripted into one power struggle after another, and twisted accordingly. In conflicts that defined the Christian Church—over attitudes toward the material world, focused on sexuality; the authority of an all-male clergy; the coming of celibacy; the branding of theological diversity as heresy; the sublimations of courtly love; the unleashing of "chivalrous" violence; the marketing of sainthood, whether in the time of Constantine, the Counter-Reformation, the Romantic era, or the Industrial Age—through all of these, reinventions of Mary Magdalene played their role. Her recent reemergence in a novel and film as the secret wife of Jesus and the mother of his fate-burdened daughter shows that the conscripting and twisting are still going on.

But, in truth, the confusion starts with the Gospels themselves.

IN THE GOSPELS several women come into the story of Jesus with great energy, including erotic energy. There are several Marys—not least, of course, Mary the mother of Jesus. But there is Mary of Bethany, sister of Martha and Lazarus. There is Mary the mother of James and Joseph, and Mary the wife of Clopas. Equally important, there are three unnamed women who are expressly identified as sexual sinners—the woman with a "bad name" who wipes Jesus' feet with ointment as a signal of repentance, a Samaritan woman whom Jesus meets at a well and an adulteress whom Pharisees haul before Jesus to see if he will condemn her. The first thing to do in unraveling the tapestry of Mary Magdalene is to tease out the threads that properly belong to these other women. Some of these threads are themselves quite knotted.

It will help to remember how the story that includes them all came to be written. The four Gospels are not eyewitness accounts. They were written 35 to 65 years after Jesus' death, a jelling of separate oral traditions that had taken form in dispersed Christian communities. Jesus died in about the year A.D. 30. The Gospels of Mark, Matthew and Luke date to about 65 to 85, and have sources and themes in common. The Gospel of John was composed around 90 to 95 and is distinct. So when we read about Mary Magdalene in each of the Gospels, as when we read about Jesus, what we are getting is not history but memory—memory shaped by time, by shades of emphasis and by efforts to make distinctive theological points. And already, even in that early period—as is evident when the varied accounts are measured against each other—the memory is blurred.

Regarding Mary of Magdala, the confusion begins in the eighth chapter of Luke:

Now after this [Jesus] made his way through towns and villages preaching, and proclaiming the Good News of the kingdom of God. With him went the Twelve, as well as certain women who had been cured of evil spirits and ailments: Mary surnamed the Magdalene, from whom seven demons had gone out, Joanna the wife of Herod's steward Chuza, Susanna, and several others who provided for them out of their own resources.

Two things of note are implied in this passage. First, these women "provided for" Jesus and the Twelve, which suggests that the women were well-to-do, respectable figures. (It is possible this was an attribution, to Jesus' time, of a role prosperous women played some years later.) Second, they all had been cured of something, including Mary Magdalene. The "seven demons," as applied to her, indicates an ailment (not necessarily possession) of a certain severity. Soon enough, as the blurring work of memory continued, and then as the written Gospel was read by Gentiles unfamiliar with such coded language, those "demons" would be taken as a sign of a moral infirmity.

This otherwise innocuous reference to Mary Magdalene takes on a kind of radioactive narrative energy because of what immediately precedes it at the end of the seventh chapter, an anecdote of stupendous power:

One of the Pharisees invited [Jesus] to a meal. When he arrived at the Pharisee's house and took his place at table, a woman came in, who had a bad name in the town. She had heard he was dining with the Pharisee and had brought with her an alabaster jar of ointment. She waited behind him at his feet, weeping, and her tears fell on his feet, and she wiped them away with her hair; then she covered his feet with kisses and anointed them with the ointment.

When the Pharisee who had invited him saw this, he said to himself, "If this man were a prophet, he would know who this woman is that is touching him and what a bad name she has."

But Jesus refuses to condemn her, or even to deflect her gesture. Indeed, he recognizes it as a sign that "her many sins must have been forgiven her, or she would not have shown such great love." "Your faith has saved you," Jesus tells her. "Go in peace."

This story of the woman with the bad name, the alabaster jar, the loose hair, the "many sins," the stricken conscience, the ointment, the rubbing of feet and the kissing would, over time, become the dramatic high point of the story of Mary Magdalene. The scene would be explicitly attached to her, and rendered again and again by the greatest Christian artists. But even a casual reading of this text, however charged its juxtaposition with the subsequent verses, suggests that the two women have nothing to do with each other—that the weeping anointer is no more connected to Mary of Magdala than she is to Joanna or Susanna.

JAMES CARROLL's *several books include* Constantine's Sword: The Church and the Jews *and the just-published* House of War: The Pentagon and the Disastrous Rise of American Power.

Other verses in other Gospels only add to the complexity. Matthew gives an account of the same incident, for example, but to make a different point and with a crucial detail added:

Jesus was at Bethany in the house of Simon the leper, when a woman came to him with an alabaster jar of the most expensive ointment, and poured it on his head as he was at table. When they saw this, the disciples were indignant. "Why this waste?" they said. "This could have been sold at a high price and the money given to the poor." Jesus noticed this. "Why are you upsetting the woman?" he said to them. . . . "When she poured this ointment on my body, she did it to prepare me for burial. I tell you solemnly, wherever in all the world this Good News is proclaimed, what she has done will be told also, in remembrance of her."

This passage shows what Scripture scholars commonly call the "telephone game" character of the oral tradition from which the Gospels grew. Instead of Luke's Pharisee, whose name is Simon, we find in Matthew "Simon the leper." Most tellingly, this anointing is specifically referred to as the traditional rubbing of a corpse with oil, so the act is an explicit foreshadowing of Jesus' death. In Matthew, and in Mark, the story of the unnamed woman puts her acceptance of Jesus' coming death in glorious contrast to the (male) disciples' refusal to take Jesus' predictions of his death seriously. But in other passages, Mary Magdalene is associated *by name* with the burial of Jesus, which helps explain why it was easy to confuse this anonymous woman with her.

A conflation of scriptural events led to images of Mary anointing Jesus' feet (this one by Tintoretto, in 1562).

AKG-IMAGES

Indeed, with this incident both Matthew's and Mark's narratives begin the move toward the climax of the Crucifixion, because one of the disciples—"the man called Judas"—goes, in the very next verse, to the chief priests to betray Jesus.

In the passages about the anointings, the woman is identified by the "alabaster jar," but in Luke, with no reference to the death ritual, there are clear erotic overtones; a man of that time was to see a woman's loosened hair only in the intimacy of the bedroom. The offense taken by witnesses in Luke concerns sex, while in Matthew and Mark it concerns money. And, in Luke, the woman's tears, together with Jesus' words, define the encounter as one of abject repentance.

But the complications mount. Matthew and Mark say the anointing incident occurred at Bethany, a detail that echoes in the Gospel of John, which has yet another Mary, the sister of Martha and Lazarus, and yet another anointing story:

Six days before the Passover, Jesus went to Bethany, where Lazarus was, whom he had raised from the dead. They gave a dinner for him there; Martha waited on them and Lazarus was among those at table. Mary brought in a pound of very costly ointment, pure nard, and with it anointed the feet of Jesus, wiping them with her hair.

Judas objects in the name of the poor, and once more Jesus is shown defending the woman. "Leave her alone; she had to keep this scent for the day of my burial," he says. "You have the poor with you always, you will not always have me."

As before, the anointing foreshadows the Crucifixion. There is also resentment at the waste of a luxury good, so death and money define the content of the encounter. But the loose hair implies the erotic as well.

In the Gospels there are several Marys—and there are three unnamed woman who are identified as sexual sinners.

The death of Jesus on Golgotha, where Mary Magdalene is expressly identified as one of the women who refused to leave him, leads to what is by far the most important affirmation about her. All four Gospels (and another early Christian text, the Gospel of Peter) explicitly name her as present at the tomb, and in John she is the first witness to the resurrection of Jesus. This—not repentance, not sexual renunciation—is her greatest claim. Unlike the men who scattered and ran, who lost faith, who betrayed Jesus, the women stayed. (Even while Christian memory glorifies

this act of loyalty, its historical context may have been less noble: the men in Jesus' company were far more likely to have been arrested than the women.) And chief among them was Mary Magdalene. The Gospel of John puts the story poignantly:

> *It was very early on the first day of the week and still dark, when Mary of Magdala came to the tomb. She saw that the stone had been moved away from the tomb and came running to Simon Peter and the other disciple, the one Jesus loved. "They have taken the Lord out of the tomb," she said, "and we don't know where they have put him."*

Peter and the others rush to the tomb to see for themselves, then disperse again.

> *Meanwhile Mary stayed outside near the tomb, weeping. Then, still weeping, she stooped to look inside, and saw two angels in white sitting where the body of Jesus had been, one at the head, the other at the feet. They said, "Woman, why are you weeping?" "They have taken my Lord away," she replied, "and I don't know where they have put him." As she said this she turned around and saw Jesus standing there, though she did not recognize him. Jesus said, "Woman, why are you weeping? Who are you looking for?" Supposing him to be the gardener, she said, "Sir, if you have taken him away, tell me where you have put him, and I will go and remove him." Jesus said, "Mary!" She knew him then and said to him in Hebrew, "Rabbuni!"—which means Master. Jesus said to her, "Do not cling to me, because I have not yet ascended to . . . my Father and your Father, to my God and your God." So Mary of Magdala went and told the disciples that she had seen the Lord and that he had said these things to her.*

As the story of Jesus was told and told again in those first decades, narrative adjustments in event and character were inevitable, and confusion of one with the other was a mark of the way the Gospels were handed on. Most Christians were illiterate; they received their traditions through a complex work of memory and interpretation, not history, that led only eventually to texts. Once the sacred texts were authoritatively set, the exegetes who interpreted them could make careful distinctions, keeping the roster of women separate, but common preachers were less careful. The *telling* of anecdotes was essential to them, and so alterations were certain to occur.

The multiplicity of the Marys by itself was enough to mix things up—as were the various accounts of anointing, which in one place is the act of a loose-haired prostitute, in another of a modest stranger preparing Jesus for the tomb, and in yet another of a beloved friend named Mary. Women who weep, albeit in a range of circumstances, emerged as a motif. As with every narrative, erotic details loomed large, especially because Jesus' attitude toward women with sexual histories was one of the things that set him apart from other teachers of the time. Not only was Jesus remembered as treating women with respect, as equals in his circle; not only did he refuse to reduce them to their sexuality; Jesus was expressly portrayed as a man who loved women, and whom women loved.

The climax of that theme takes place in the garden of the tomb, with that one word of address, "Mary!" It was enough to make her recognize him, and her response is clear from what he says then: "Do not cling to me." Whatever it was before, bodily expression between Jesus and Mary of Magdala must be different now.

OUT OF THESE DISPARATE THREADS—the various female figures, the ointment, the hair, the weeping, the unparalleled intimacy at the tomb—a new character was created for Mary Magdalene. Out of the threads, that is, a tapestry was woven—a single narrative line. Across time, this Mary went from being an important disciple whose superior status depended on the confidence Jesus himself had invested in her, to a repentant whore whose status depended on the erotic charge of her history and the misery of her stricken conscience. In part, this development arose out of a natural impulse to see the fragments of Scripture whole, to make a disjointed narrative adhere, with separate choices and consequences being tied to each other in one drama. It is as if Aristotle's principle of unity, given in *Poetics*, was imposed after the fact on the foundational texts of Christianity.

Thus, for example, out of discrete episodes in the Gospel narratives, some readers would even create a far more unified—more satisfying—legend according to which Mary of Magdala was the unnamed woman being married at the wedding feast of Cana, where Jesus famously turned water into wine. Her spouse, in this telling, was John, whom Jesus immediately recruited to be one of the Twelve. When John went off from Cana with the Lord, leaving his new wife behind, she collapsed in a fit of loneliness and jealousy and began to sell herself to other men. She next appeared in the narrative as the by then notorious adulteress whom the Pharisees thrust before Jesus. When Jesus refused to condemn her, she saw the error of her ways. Consequently, she went and got her precious ointment and spread it on his feet, weeping in sorrow. From then on she followed him, in chastity and devotion, her love forever unconsummated—"Do not cling to me!"—and more intense for being so.

Such a woman lives on as Mary Magdalene in Western Christianity and in the secular Western imagination, right down, say, to the rock opera *Jesus Christ Superstar*, in which Mary Magdalene sings, "I don't know how to love him . . . He's just a man, and I've had so many men before . . . I want him so. I love him so." The story has timeless appeal, first, because that problem of "how"—whether love should be eros or agape; sensual or spiritual; a matter of longing or consummation—defines the

human condition. What makes the conflict universal is the dual experience of sex: the necessary means of reproduction and the madness of passionate encounter. For women, the maternal can seem to be at odds with the erotic, a tension that in men can be reduced to the well-known opposite fantasies of the madonna and the whore. I write as a man, yet it seems to me in women this tension is expressed in attitudes not toward men, but toward femaleness itself. The image of Mary Magdalene gives expression to such tensions, and draws power from them, especially when it is twinned to the image of that other Mary, Jesus' mother.

Christians may worship the Blessed Virgin, but it is Magdalene with whom they identify. What makes her compelling is that she is not merely the whore in contrast to the Madonna who is the mother of Jesus, but that she combines both figures in herself. Pure by virtue of her repentance, she nevertheless remains a woman with a past. Her conversion, instead of removing her erotic allure, heightens it. The misery of self-accusation, known in one way or another to every human being, finds release in a figure whose abject penitence is the condition of recovery. That she is sorry for having led the willful life of a sex object makes her only more compelling as what might be called a repentance object.

So the invention of the character of Mary Magdalene as repentant prostitute can be seen as having come about because of pressures inhering in the narrative form and in the primordial urge to give expression to the inevitable tensions of sexual restlessness. But neither of these was the main factor in the conversion of Mary Magdalene's image, from one that challenged men's misogynist assumptions to one that confirmed them. The main factor in that transformation was, in fact, the manipulation of her image by those very men. The mutation took a long time to accomplish—fully the first 600 years of the Christian era.

Redeemed by her repentance, Mary (by 17th-century artist Jusepe de Ribera) remains a woman with a past.

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In time Mary was transformed, from a confidante of Jesus to a former prostitute noted for her stricken conscience.

AGAIN, IT HELPS to have a chronology in mind, with a focus on the place of women in the Jesus movement. Phase one is the time of Jesus himself, and there is every reason to believe that, according to his teaching and in his circle, women were uniquely empowered as fully equal. In phase two, when the norms and assumptions of the Jesus community were being written down, the equality of women is reflected in the letters of St. Paul (c. 50-60), who names women as full partners—*his* partners—in the Christian movement, and in the Gospel accounts that give evidence of Jesus' own attitudes and highlight women whose courage and fidelity stand in marked contrast to the men's cowardice.

But by phase three—after the Gospels are written, but before the New Testament is defined as such—Jesus' rejection of the prevailing male dominance was being eroded in the Christian community. The Gospels themselves, written in those several decades after Jesus, can be read to suggest this erosion because of their emphasis on the authority of "the Twelve," who are all males. (The all-male composition of "the Twelve" is expressly used by the Vatican today to exclude women from ordination.) But in the books of the New Testament, the argument among Christians over the place of women in the community is implicit; it becomes quite explicit in other sacred texts of that early period. Not surprisingly, perhaps, the figure who most embodies the imaginative and theological conflict over the place of women in the "church," as it had begun to call itself, is Mary Magdalene.

Here, it is useful to recall not only how the New Testament texts were composed, but also how they were *selected* as a sacred literature. The popular assumption is that the Epistles of Paul and James and the four Gospels, together with the Acts of the Apostles and the Book of Revelation, were pretty much what the early Christian community had by way of foundational writings. These texts, believed to be "inspired by the Holy Spirit," are regarded as having some-

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how been conveyed by God to the church, and joined to the previously "inspired" and selected books of the Old Testament to form "the Bible." But the holy books of Christianity (like the holy books of Judaism, for that matter) were established by a process far more complicated (and human) than that.

The explosive spread of the Good News of Jesus around the Mediterranean world meant that distinct Christian communities were springing up all over the place. There was a lively diversity of belief and practice, which was reflected in the oral traditions and, later, texts those communities drew on. In other words, there were many other texts that could have been included in the "canon" (or list), but weren't.

It was not until the fourth century that the list of canonized books we now know as the New Testament was established. This amounted to a milestone on the road toward the church's definition of itself precisely in opposition to Judaism. At the same time, and more subtly, the church was on the way toward understanding itself *in opposition to women*. Once the church began to enforce the "orthodoxy" of what it deemed Scripture and its doctrinally defined creed, rejected texts—and sometimes the people who prized them, also known as heretics—were destroyed. This was a matter partly of theological dispute—If Jesus was divine, in what way?—and partly of boundary-drawing against Judaism. But there was also an expressly philosophical inquiry at work, as Christians, like their pagan contemporaries, sought to define the relationship between spirit and matter. Among Christians, that argument would soon enough focus on sexuality—and its battleground would be the existential tension between male and female.

AS THE SACRED BOOKS were canonized, which texts were excluded, and why? This is the long way around, but we are back to our subject,

because one of the most important Christian texts to be found outside the New Testament canon is the so-called Gospel of Mary, a telling of the Jesus-movement story that features Mary Magdalene (decidedly not the woman of the "alabaster jar") as one of its most powerful leaders. Just as the "canonical" Gospels emerged from communities that associated themselves with the "evangelists," who may not actually have "written" the texts, this one is named for Mary not because she "wrote" it, but because it emerged from a community that recognized her authority.

Whether through suppression or neglect, the Gospel of Mary was lost in the early period—just as the real Mary Magdalene was beginning to disappear into the writhing misery of a penitent whore, and as women were disappearing from the church's inner circle. It reappeared in 1896, when a well-preserved, if incomplete, fifth-century copy of a document dating to the second century showed up for sale in Cairo; eventually, other fragments of this text were found. Only slowly through the 20th century did scholars appreciate what the rediscovered Gospel revealed, a process that culminated with the publication in 2003 of *The Gospel of Mary of Magdala: Jesus and the First Woman Apostle* by Karen L. King.

Although Jesus rejected male dominance, as symbolized in his commissioning of Mary Magdalene to spread word of the Resurrection, male dominance gradually made a powerful comeback within the Jesus movement. But for that to happen, the commissioning of Mary Magdalene had to be reinvented. One sees that very thing under way in the Gospel of Mary.

For example, Peter's preeminence is elsewhere taken for granted (in Matthew, Jesus says, "You are Peter and on this rock I will build my Church"). Here, he defers to her:

Peter said to Mary, "Sister, we know that the Savior loved you more than all other women. Tell us the words of the Savior that you remember, the

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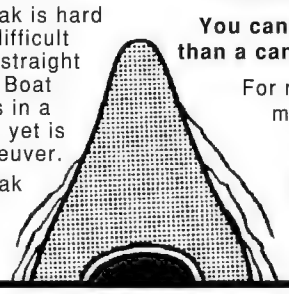

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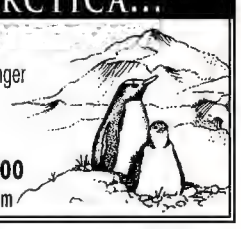

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things which you know that we don't because we haven't heard them."

Mary responded, "I will teach you about what is hidden from you." And she began to speak these words to them.

Mary recalls her vision, a kind of esoteric description of the ascent of the soul. The disciples Peter and Andrew are disturbed—not by what she says, but by how she knows it. And now a jealous Peter complains to his fellows, "Did [Jesus] choose her over us?" This draws a sharp rebuke from another apostle, Levi, who says, "If the Savior made her worthy, who are you then for your part to reject her?"

That was the question not only about Mary Magdalene, but about women generally. It should be no surprise, given how successfully the excluding dominance of males established itself in the church of the "Fathers," that the Gospel of Mary was one of the texts shunted aside in the fourth century. As that text shows, the early image of this Mary as a trusted apostle of Jesus, reflected even in the canonical Gospel texts, proved to be a major obstacle to establishing that male dominance, which is why, whatever other "heretical" problems this gospel posed, that image had to be recast as one of subservience.

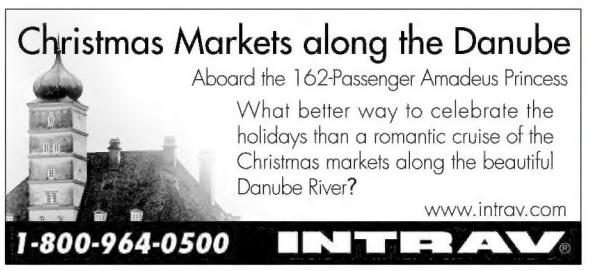
Simultaneously, the emphasis on sexuality as the root of all evil served to subordinate all women. The ancient Roman world was rife with flesh-hating spiritualities—Stoicism, Manichaeism, Neoplatonism—and they influenced Christian thinking just as it was jelling into "doctrine." Thus the need to disempower the figure of Mary Magdalene, so that her succeeding sisters in the church would not compete with men for power, meshed with the impulse to discredit women generally. This was most efficiently done by reducing them to their sexuality, even as sexuality itself was reduced to the realm of temptation, the source of human unworthiness. All of this—from the sexualizing of Mary Magda-

lene, to the emphatic veneration of the virginity of Mary, the mother of Jesus, to the embrace of celibacy as a clerical ideal, to the marginalizing of female devotion, to the recasting of piety as self-denial, particularly through penitential cults—came to a kind of defining climax at the end of the sixth century. It was then that all the philosophical, theological and ecclesiastical impulses curved back to Scripture, seeking an ultimate imprimatur for what by then was a firm cultural prejudice. It was then that the rails along which the church—and the Western imagination—would run were set.

POPE GREGORY I (c. 540-604) was born an aristocrat and served as the prefect of the city of Rome. After his father's death, he gave everything away and turned his palatial Roman home into a monastery, where he became a lowly monk. It was a time of plague, and indeed the previous pope, Pelagius II, had died of it. When the saintly Gregory was elected to succeed him, he at once emphasized penitential forms of worship as a way of warding off the disease. His pontificate marked a solidifying of discipline and thought, a time of reform and invention both. But it all occurred against the backdrop of the plague, a doom-laden circumstance in which the abjectly repentant Mary Magdalene, warding off the spiritual plague of damnation, could come into her own. With Gregory's help, she did.

Known as Gregory the Great, he remains one of the most influential figures ever to serve as pope, and in a famous series of sermons on Mary Magdalene, given in Rome in about the year 591, he put the seal on what until then had been a common but unsanctioned reading of her story. With that, Mary's conflicted image was, in the words of Susan Haskins, author of *Mary Magdalene: Myth and Metaphor*, "finally settled . . . for nearly fourteen hundred years."

It all went back to those Gospel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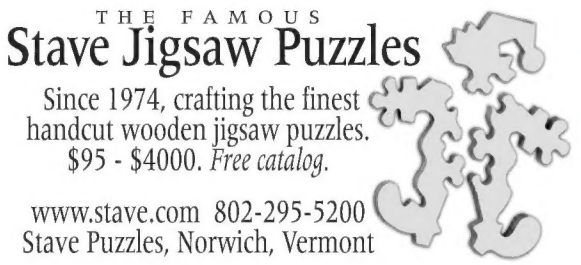
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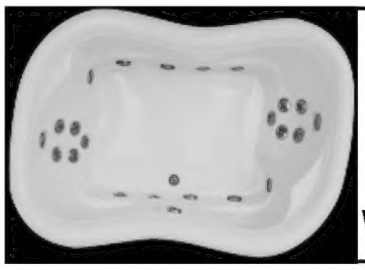

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texts. Cutting through the exegetes' careful distinctions—the various Marys, the sinful women—that had made a bald combining of the figures difficult to sustain, Gregory, standing on his own authority, offered his decoding of the relevant Gospel texts. He established the context within which their meaning was measured from then on:

> *She whom Luke calls the sinful woman, whom John calls Mary, we believe to be the Mary from whom seven devils were ejected according to Mark. And what did these seven devils signify, if not all the vices?*

There it was—the woman of the "alabaster jar" named by the pope himself as Mary of Magdala. He defined her:

> *It is clear, brothers, that the woman previously used the unguent to perfume her flesh in forbidden acts. What she therefore displayed more scandalously, she was now offering to God in a more praiseworthy manner. She had coveted with earthly eyes, but now through penitence these are consumed with tears. She displayed her hair to set off her face, but now her hair dries her tears. She had spoken proud things with her mouth, but in kissing the Lord's feet, she now planted her mouth on the Redeemer's feet. For every delight, therefore, she had had in herself, she now immolated herself. She turned the mass of her crimes to virtues, in order to serve God entirely in penance.*

The address "brothers" is the clue. Through the Middle Ages and the Counter-Reformation, into the modern period and against the Enlightenment, monks and priests would read Gregory's words, and through them they would read the Gospels' texts themselves. Chivalrous knights, nuns establishing houses for unwed mothers, courtly lovers, desperate sinners, frustrated celibates and an endless succession of preachers would treat Gregory's reading as

literally the gospel truth. Holy Writ, having recast what had actually taken place in the lifetime of Jesus, was itself recast.

The men of the church who benefited from the recasting, forever spared the presence of females in their sanctuaries, would not know that this was what had happened. Having created a myth, they would not remember that it was mythical. Their Mary Magdalene—no fiction, no composite, no betrayal of a once venerated woman—became the only Mary Magdalene that had ever existed.

This obliteration of the textual distinctions served to evoke an ideal of virtue that drew its heat from being a celibate's vision, conjured for celibates. Gregory the Great's overly particular interest in the fallen woman's past—what that oil had been used for, how that hair had been displayed, that mouth—brought into the center of church piety a vaguely prurient energy that would thrive under the licensing sponsorship of one of the church's most revered reforming popes. Eventually, Magdalene, as a denuded object of Renaissance and Baroque painterly preoccupation, became a figure of nothing less than holy pornography, guaranteeing the ever-lustful harlot—if lustful now for the ecstasy of holiness—a permanent place in the Catholic imagination.

Thus Mary of Magdala, who began as a powerful woman at Jesus' side, "became," in Haskins' summary, "the redeemed whore and Christianity's model of repentance, a manageable, controllable figure, and effective weapon and instrument of propaganda against her own sex." There were reasons of narrative form for which this happened. There was a harnessing of sexual restlessness to this image. There was the humane appeal of a story that emphasized the possibility of forgiveness and redemption. But what most drove the anti-sexual sexualizing of Mary Magdalene was the male need to dominate women. In the Catholic Church, as elsewhere, that need is still being met.

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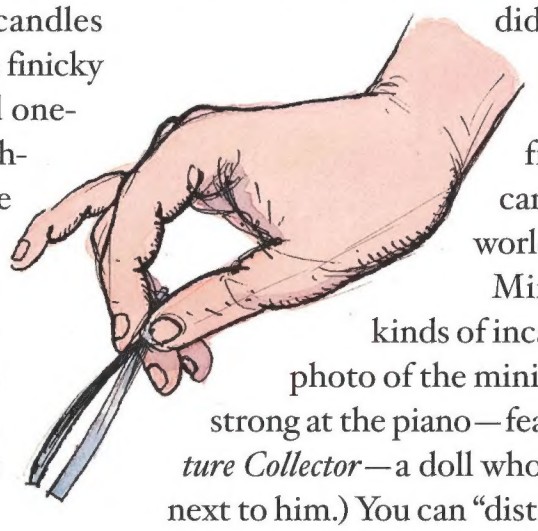
Land of the Wee

Where else can you decorate the bordello and exercise godlike powers? **BY ANN HODGMAN**

I'VE BEEN researching old-time brothels, and it turns out that they were lovely places. They had nannies to take care of the babies that are a side effect of that particular business, and barbershops with showers where the clients could freshen up after they'd been upstairs. The madams were as jolly as Mrs. Santa Claus. Louis Armstrong played the piano in the bar. And if the authorities raided the place, you could just scoop them up and drop them into a box. After all, they were only five inches tall.

Perhaps you didn't realize that dollhouse miniature brothels are a collectors' item. How about miniature street people? How about miniature outhouses—you've never heard of *those*? You are so, so out of it.

Dollhouse miniatures are toys that you would never let a child touch or even breathe on. They're for grown-ups—obsessive grown-ups, like me. The most popular miniature scale is one inch to one foot; in other words, a three-fourths-inch birthday cake with one-fifth-inch candles would correspond to a normal nine-inch cake. More finicky collectors and builders work in one-half-inch and one-quarter-inch scales. The truly insane work in 1/144th-inch scale—in other words, 12 times smaller than the standard. ("Dollhouses for dollhouses," as they say.) I've always been a one-inch scale person, which drives me crazy enough. I have more tweezers in my basement than I do in all my medicine cabinets combined, and using them to glue 1/16th-inch stamps onto one-half-inch envelopes makes me sweat and swear more than getting stuck in any traffic jam.



We tend to think of America as the land of the supersized, but when you look closely, you realize that the entire country is also "supershrunk" somewhere. Well, maybe not the *entire* country. I've never seen a miniature sweatshop, but I've seen plenty of miniature Depression glass. Also miniature *Titanic* menus. Also a re-created "corset" scene from *Gone with the Wind*, with acrylic cameramen and a tiny boom mike. Also a miniature travois of the sort used by the North American Plains Indians, countless miniature fishing shacks and three-inch shawls hand-knitted with silk as thin as an eyelash.

Working on this kind of thing is a good way to trick yourself into thinking you're a historian. I've been furnishing an 1880s miniature general store for three years. I don't like to do anything in a, sorry, *small* way, so this project has required that I subscribe to several miniatures magazines, visit miniatures conventions and museums around the country and spend 1,000 percent of my income on tiny jars of laudanum, minuscule potatoes and half-inch mahogany View-Masters with miniature 1880s photographs in them. (As I said, this is a *general* store.) Because I'm the storekeeper, I can stock it with whatever I want—even a miniature can of tomatoes that didn't appear on the market until the early 1900s. "I *knew* you wouldn't keep it in period," a friend of mine scoffed. But what can happen to me? In this weensy world, I'm in charge.

Miniatures let you play god in all kinds of incarnations. (Which is why, in the photo of the miniature bordello with Louis Armstrong at the piano—featured in a recent issue of *Miniature Collector*—a doll who appears to be Elvis is standing next to him.) You can "distress" furniture that looks out of period. No need to let it weather naturally: there are compounds specifically created for aging dollhouse wood! You can put a cat next to a fishbowl and know that she'll never knock it over.

And you can arrange your miniature street people in your miniature town square without feeling sorry for them. They'll never be hungry or cold; the worst they face is dust. Miniaturizing solves all kinds of social problems. I wonder if this has occurred to the gods who play with *us*?

RICHARD THOMPSON